

TWELFTH BIENNIAL REPORT
OF THE
NORTH CAROLINA
BOARD OF HEALTH

1907-1908

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TWELFTH BIENNIAL REPORT

OF THE

NORTH CAROLINA

BOARD OF HEALTH

1907-1908

RALEIGH

E. M. UZZELL & CO., STATE PRINTERS AND BINDERS

1909

MEMBERS OF THE BOARD.

ELECTED BY THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.

GEORGE G. THOMAS, M. D., President.....	Wilmington.
Term Expires 1911.	
THOMAS E. ANDERSON, M. D.....	Statesville.
Term Expires 1911.	
DAVID T. TAYLOR, M. D.....	Washington.
Term Expires 1913.	
JAMES A. BURROUGHS, M. D.....	Asheville.
Term Expires 1913.	

APPOINTED BY THE GOVERNOR.

J. L. LUDLOW, C. E., Engineer.....	Winston-Salem.
Term Expires 1909.	
J. HOWELL WAY, M. D.....	Waynesville.
Term Expires 1911.	
W. O. SPENCER, M. D.....	Winston-Salem.
Term Expires 1911.	
EDWARD C. REGISTER, M. D.....	Charlotte.
Term Expires 1913.	
RICHARD H. LEWIS, M. D., Secretary and Treasurer..	Raleigh.
Term Expires 1913.	

COUNTY SUPERINTENDENTS OF HEALTH.

Alamance	Dr. H. M. Montgomery.
Alexander	Dr. O. L. Hollar.
Alleghany	Dr. Robert Thompson.
Anson	Dr. E. S. Ashe.
Ashe	Dr. M. Blevins.
Beaufort	Dr. D. T. Tayloe.
Bertie	Dr. H. V. Dunston.
Bladen	Dr. L. B. Evans.
Brunswick	Dr. J. Arthur Doshier.
Buncombe	Dr. D. E. Sevier.
Burke	Dr. J. L. Laxton.
Cabarrus	Dr. R. S. Young.
Caldwell	Dr. C. L. Wilson.
Camden	Dr. C. G. Ferebee.
Carteret	Dr. W. E. Headen.
Caswell	Dr. S. A. Malloy.
Catawba	Dr. George H. West.
Chatham	Dr. J. H. Taylor.
Cherokee	
Chowan	Dr. H. M. S. Cason.
Clay	Dr. P. B. Killian.
Cleveland	Dr. T. E. McBrayer.
Columbus	Dr. H. B. Maxwell.
Craven	Dr. Joseph F. Rhem.
Cumberland	Dr. A. S. Rose.
Currituck	Dr. H. M. Shaw.
Dare	
Davidson	Dr. Joel Hill.
Davie	Dr. M. D. Kimbrough.
Duplin	Dr. John A. Ferrell.
Durham	Dr. N. M. Johnson.
Edgecombe	Dr. W. J. Thigpen.
Forsyth	Dr. S. F. Pfohl.
Franklin	Dr. R. F. Yarborough.
Gaston	Dr. L. N. Glenn.
Gates	Dr. Geo. D. Williams.
Graham	Dr. M. T. Maxwell.
Granville	Dr. S. D. Booth.
Greene	Dr. W. B. Murphy.
Guilford	Dr. Edmund Harrison.

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Halifax	Dr. I. E. Green.
Harnett	Dr. J. W. Halford.
Haywood	Dr. J. F. Abel.
Henderson	Dr. J. G. Waldrop.
Hertford	Dr. J. H. Mitchell.
Hyde	Dr. R. E. Windley.
Iredell	Dr. M. R. Adams.
Jackson	Dr. A. A. Nichols.
Johnston	Dr. L. D. Wharton.
Jones	
Lee	Dr. J. P. Monroe.
Lenoir	Dr. C. L. Pridgen.
Lincoln	Dr. R. W. Petrie.
McDowell	Dr. M. L. Justice.
Macon	Dr. S. H. Lyle.
Madison	Dr. W. J. Weaver.
Martin	Dr. W. E. Warren.
Mecklenburg	Dr. C. S. McLaughlin.
Mitchell	Dr. Virgil R. Butt.
Montgomery	Dr. J. B. Shamburger.
Moore	Dr. Gilbert McLeod.
Nash	Dr. J. P. Battle.
New Hanover	Dr. W. D. McMillan.
Northampton	Dr. H. W. Lewis.
Onslow	Dr. Cyrus Thompson.
Orange	Dr. C. D. Jones.
Pamlico	
Pasquotank	Dr. J. B. Griggs.
Pender	Dr. Robert H. Bradford.
Perquimans	Dr. T. P. McMullan.
Person	Dr. W. A. Bradsher.
Pitt	Dr. Joseph E. Nobles.
Polk	Dr. Earle Grady.
Randolph	Dr. S. A. Henley.
Richmond	Dr. N. C. Hunter.
Robeson	Dr. H. T. Pope.
Rockingham	Dr. Sam Ellington.
Rowan	Dr. I. H. Foust.
Rutherford	Dr. E. B. Harris.
Sampson	Dr. Frank H. Holmes.
Scotland	Dr. K. A. Blue.
Stanly	Dr. J. N. Anderson.
Stokes	
Surry	Dr. John R. Woltz.

Swain	Dr. J. A. Cooper.
Transylvania	Dr. Goode Cheatham.
Tyrrell	
Union	Dr. Henry D. Stewart.
Vance	Dr. John Hill Tucker.
Wake	Dr. J. W. McGee, Jr.
Warren	Dr. M. P. Perry.
Washington	Dr. W. H. Ward.
Watanga	Dr. J. M. Hedges.
Wayne	Dr. T. L. Ginn.
Wilkes	Dr. John Q. Myers.
Wilson	Dr. W. S. Anderson.
Yadkin	Dr. S. L. Russell.
Yancey	Dr. W. B. Robertson.

LETTER OF TRANSMISSION.

NORTH CAROLINA BOARD OF HEALTH,

OFFICE OF THE SECRETARY,

RALEIGH, June 15, 1909.

His Excellency, W. W. KITCHIN,

Governor of North Carolina.

SIR:—I have the honor to present herewith the Twelfth Biennial Report of the North Carolina Board of Health.

Very respectfully,

RICHARD H. LEWIS, M. D.,

Secretary and Treasurer.

TWELFTH BIENNIAL REPORT
OF THE
NORTH CAROLINA BOARD OF HEALTH.
1907-1908.

The past two years, from the sanitary point of view, have been uneventful. Beyond an outbreak of typhoid fever of unusual severity in the little village of Council, Bladen County, extending through two seasons, but limited in extent because of the small population, there has been no epidemic worthy of the name. Smallpox has continued to crop out at various times and points, but has been decidedly less in extent than for several years, and of the same extremely mild type.

The most noteworthy event of the past biennial period is the establishment of the State Sanatorium for Tuberculosis. The General Assembly of 1907 passed an act authorizing its establishment, and appropriated \$15,000 for the purchase of a site and erection of buildings and \$5,000 annually for its support. While the amount appropriated was altogether inadequate, it was nevertheless the beginning of what we hope and have reason to believe will develop into an institution of great value in the crusade now waging all over the civilized world against man's most deadly enemy. Considerable difficulty was found in securing a satisfactory site, but finally an excellent location with a clear title, in the pine-clad sandhills at Montrose, on the Aberdeen and Rockfish Railroad, eight miles from Aberdeen, just across the Moore County line in Cumberland, was obtained. We doubt if a site more nearly ideal for the purpose can be found east of the Mississippi. With a capacity of thirty-four, it was opened for patients in November, 1908, and has already done good work.

For an account of the work of the Board in detail, the reader is referred to the pages following.

MEETINGS OF THE BOARD.

MINUTES OF THE ANNUAL MEETING AT MOREHEAD CITY.

MOREHEAD CITY, June 12, 1907.

The annual meeting of the Board was held in the Atlantic Hotel, President Thomas in the chair. Members present: Drs. Thomas, Battle, Way, Anderson, Spencer, Register, Lewis (R. H.), and Colonel Ludlow.

The minutes of the last meeting were read and approved.

Dr. McCarthy, Biologist of the State Laboratory of Hygiene, read his report. On motion, its consideration was temporarily postponed, with the understanding that a report of the action of the Board thereon would be made to him at the end of the meeting.

On motion of Dr. Spencer, Dr. C. A. Shore was elected Director of the Laboratory of Hygiene, at an annual salary of \$2,000, beginning January 1, 1908.

On motion, the Treasurer was instructed to pay Dr. McCarthy, Biologist of the State Laboratory of Hygiene, the sum of \$500 for the purchase of his typewriter and to cover all claims against the Laboratory for fees for special analyses and for all other claims, as set forth in his report of this date; and it was further ordered that his services be continued until March 1, 1908, at the rate of \$2,000 per annum, beginning June 1, 1907. This was accepted by Dr. McCarthy.

On motion, the salary of the chemical assistant in the Laboratory, Miss Daisy B. Allen, was made \$75 a month, beginning July 1, 1907.

The Secretary having called attention to the fact that the terms of office of all the members of the Board of Embalming, by limitation or by change in the personnel of the Board of

Health, had expired, Messrs. Harry and Simpson, embalmers, having held over, the following were elected as members from the Board of Health:

Dr. J. Howell Way, Waynesville; term expires 1909.

Dr. E. C. Register, Charlotte; term expires 1908.

Dr. R. H. Lewis, Raleigh; term expires 1912.

The Secretary was instructed to prepare resolutions of appreciation of the valuable aid extended to the Board of Health in its laboratory work by the State Board of Agriculture and to make them a part of these proceedings.

The President was requested to appoint, at his convenience, the committees for the inspection of the public institutions of the State.

Adjourned after midnight, to meet again in the morning.

RICHARD H. LEWIS,

Secretary.

MOREHEAD CITY, June 13, 1907.

The Board reassembled with the same members present as the night before.

On motion of Colonel Ludlow, the Secretary was instructed to obtain a United States Geological Survey field outfit for water analyses, with the necessary supplementary apparatus for the bacteriological examinations of water supplies, and to employ in emergency a suitable man to make the examinations whenever in the opinion of the Engineer and the Secretary it might be deemed advisable.

On motion, Colonel Ludlow and the Secretary were elected delegates to the American Public Health Association.

The term of office of the Secretary having expired at this meeting by limitation, Dr. Way nominated the present incumbent and moved that the Present be instructed to cast the ballot, there being no other nomination. The motion was carried, the President cast the ballot of the Board and the present incumbent was re-elected for a term of six years.

The Treasurer presented his reports, with vouchers, for the Board of Health and for the Laboratory of Hygiene. Colonel Ludlow and Dr. Anderson were appointed by the President a committee to audit the same.

The engineer of the Board was requested to continue his supervision of the public water supplies.

The auditing committee reported that they had examined the accounts of the Treasurer and found them correct.

On motion, the Board adjourned to meet at 12 M. to-morrow in conjoint session with the State Medical Society.

RICHARD H. LEWIS,

Secretary.

CONJOINT SESSION
WITH THE
STATE MEDICAL SOCIETY AT MOREHEAD CITY.

JUNE 12, 1907.

The conjoint session of the State Board of Health with the State Medical Society, according to custom, was held at 12 M. on June 12, the second day of the meeting of the Society. Dr. George G. Thomas, President of the Board of Health, in the chair.

REPORT OF THE SECRETARY.

The Secretary read his annual report, as follows:

ANNUAL REPORT OF SECRETARY OF THE NORTH CAROLINA
BOARD OF HEALTH, MAY 1, 1906, TO MAY 1, 1907.

During the past year we have suffered no special outbreak of disease and the health of our people in general has been about as usual. A detailed statement of the work of the Board will be found in the Eleventh Biennial Report, which has been for months and still is in the hands of the printer. A copy will be sent to any one asking for it as soon as it is published.

The work of your Secretary has been for the most part of the usual routine character, special attention having been paid to the further distribution of the pamphlets on the prevention of tuberculosis. The indications are that the wide circulation of this publication has made an impression upon our people and has been of real assistance in the campaign against this most fatal of all our diseases. I am satisfied that the plan adopted of sending the pamphlet direct to the individual, with a letter urging him to read it and to assist in its distribution, has added much to its effectiveness. Over 100,000 copies have been mailed to date, and I am confident that no expenditure of our meager appropriation has brought forth better results than that paid out for the postage on this pamphlet.

With January came the meeting of the General Assembly, which is always a period of mingled hopefulness and anxiety. While the attitude of the last Legislature was, perhaps, less friendly to our license law than has been the case for many sessions, its interest in the public health was more pronounced than usual—an interest that was not simply academic, but one that did something worth while. In *The Bulletin* for April I printed all the acts of general

interest bearing on the public health, both directly and indirectly, but it may not be amiss to refer again in this place to the more important.

The act creating the State Laboratory of Hygiene, which carried no annual appropriation from the general fund for its support, was so amended as to give it two thousand dollars annually; at the same time increasing the annual tax of sixty dollars upon water companies by four dollars. This latter does not materially increase the income of the Laboratory, but all the companies would not pay expressage on water samples, and the four dollars were added to cover that. With the tax from the water companies, now numbering fifty-one and gradually increasing year by year, the income will be sufficient, with the money on hand, to adequately equip and conduct an excellent laboratory without outside help. In this connection it is proper to call attention again to the fact that without the generous aid given us by the Board of Agriculture we, in all probability, would not have had any laboratory at all. It should be remembered that at first the Board of Agriculture had biological analyses of drinking-water made for us in their laboratory free of charge—until the water tax was obtained four years ago—and that since that time it has, in addition to furnishing the Laboratory with gas and water, paid \$750 a year towards the salary of the Director. I hope suitable acknowledgment of the enlightened liberality of the Board will be made by the conjoint session. The report of the Director for the past year is appended.

In order to extend the benefits of the Laboratory as far as possible to the people, an act was passed authorizing the preventive treatment of rabies by the Director—who, in the reorganization, will doubtless be a thoroughly trained medical man—when it can be done without interfering with the legitimate work of the Laboratory proper.

A decided advance in State medicine was marked by the enactment of the bill establishing a sanatorium for tuberculous patients, appropriating \$15,000 for a plant and \$5,000 annually for support. The chief credit for this particular legislation is due to Dr. J. E. Brooks, of Greensboro, who was "the man behind the gun," and the Hon. J. R. Gordon, M. D., member from Guilford of the House of Representatives, who was mainly instrumental in securing its passage. Acknowledgment of this was made by the Board of Directors, of which the Secretary of the Board of Health is *ex officio* a member, at their first meeting, in the election of Dr. Gordon Chairman of the Board and Dr. Brooks Superintendent of the Sanatorium. While the appropriation is very small, it will provide for a beginning, and as the Superintendent is not only an intelligent and capable physician, but an enthusiast on the subject, I feel confident that it will succeed.

As the competency of our physicians is of the highest importance

to the public health, anything bearing upon our medical license law is of importance to us. During the session of the Legislature bills for the relief of physicians in Cherokee, Clay, and Graham counties and in Chatham County were enacted into laws. In the one case physicians having diplomas were allowed to practice without license until May 1, 1909, and in the other simply to stand the examination for license without exhibiting a diploma. The reason given for this legislation was the same in both cases—that in the remote, sparsely settled, and physically rough regions physicians so well educated as to meet the requirements of our very high standard had not settled, and that unless such action was taken the people in the affected regions would be without medical aid. While actively opposing the first-named bill for fear it might be an entering wedge threatening the integrity of our license law, I could not deny the facts, nor in my own mind deny the inherent reasonableness of the contention in the light of those facts. It was indeed the realization of what we have been anticipating, and I was thoroughly impressed with the importance of devising some means of practically lowering the standard to meet such conditions lest our license law should be emasculated in the near future. As a means to this end I approved, as Chairman of the Society's Committee on Legislation, the passage of a bill authorizing the Board of Medical Examiners to reciprocate with other States *in their discretion*. I welcomed this bill the more gladly because it enabled me to secure the voluntary suppression by its author of another bill requiring the Board of Examiners to grant licenses to any one presenting a diploma from the American Association of Medical Colleges and a license from *any* State. As the standard of some States is extremely low, and in nearly all lower than in ours, the passage of this bill would have practically repealed our license law and have undone the work of fifty years for the elevation of our profession and the protection of the people against incompetent physicians. Before the present meeting of the Board of Medical Examiners I addressed a circular-letter to each member of the same, calling attention to the conditions above set forth and to the importance of action on their part to meet them as far as possible, suggesting reciprocation with the low-standard States when the conditions for this concession demanded it, and also that it would probably be well to lessen the rigor of the examination somewhat by granting certificates on the branches passed, and thereby encourage men to come a second time and finish up successfully rather than give up in despair and take the chances of practicing illegally. I was, therefore, much gratified to learn from President Kent, who stopped over in Raleigh on his way to the meeting for the purpose, that he had secured from the Assistant Attorney-General an opinion to the effect that it would be legal for his Board to grant a license and to require the recipient to sign a contract to

restrict his practice to a certain county or section, the Assistant Attorney-General writing out the form of the said contract. The judicious use of this privilege will, I think, solve the problem.

SMALLPOX.

I am very glad to state that smallpox has been very much less prevalent. In 1905 the total number of cases was 7,375 with 31 deaths; in 1906, 6,049 cases and 17 deaths, while during the year ending May 1, 1907, the total number of cases was only 1,897 with 6 deaths. The following is a tabulated statement of the disease by counties:

SMALLPOX REPORT, FROM MAY 1, 1906, TO MAY 1, 1907.

COUNTIES.	Number of Cases.			Number of Deaths.		
	White.	Colored.	Total.	White.	Colored.	Total.
Alamance -----	24	74	98			
Anson -----	10	10	20			
Ashe* -----	15		15			
Bertie -----	5	11	16			
Bladen* -----	12	3	15			
Brunswick -----	5	30	35		2	2
Cabarrus -----	1	6	7			
Carteret -----	2		2			
Catawba -----	1		1			
Chatham -----	12	15	27			
Cherokee -----	2	1	3			
Chowan* -----	100	200	300			
Cleveland -----	4		4			
Columbus -----	1	1	2			
Cumberland -----	19	4	23			
Currituck -----	22	7	29			
Davidson -----	6		6			
Duplin -----		12	12			
Durham -----	64	50	114			
Forsyth -----	24		24			
Franklin* -----	9	*91	*100			
Gaston -----	10	4	14			
Granville -----	2	5	7			
Guilford -----	5	94	99			
Halifax -----	2	1	3			

SMALLPOX—CONTINUED.

COUNTIES.	Number of Cases.			Number of Deaths.		
	White.	Colored.	Total.	White.	Colored.	Total.
Harnett-----	18	4	22	1		1
Hertford-----	15	30	45		1	1
Lincoln-----	17		17	1		1
Martin-----	20	100	120			
Mecklenburg-----	4	4	8			
Moore-----	4	23	27			
Nash-----	10		10			
New Hanover-----		1	1			
Northampton-----		3	3			
Orange-----	25		25			
Person-----		1	1			
Pitt-----	13		13			
Randolph-----	26	65	91			
Richmond*-----	7	6	13			
Robeson-----	10		10			
Rowan-----	3	2	5			
Rutherford-----	4		4			
Stanly-----		1	1			
Vance-----	8	5	13			
Wake*-----	67	272	339			
Warren-----	4	2	6			
Washington*-----	8	20	28			
Wayne-----		190	190		1	1
Total in forty-eight counties----	620	1,348	1,968	2	4	6
Death rate, per cent.-----				.003--	.002--	.003--

* Estimated.

In compliance with the instructions given the Secretary at the meeting of the Board the night before, he presented the following resolutions of appreciation of the great service rendered the cause of the public health by the State Board of Agriculture in having made for the Board in its laboratory sanitary analyses free of charge for two years and upon payment by the Board of Health of half the salaries of

the Biologist and his assistant for four years longer, the Board of Agriculture defraying all other expenses of the laboratory, which were unanimously adopted:

Resolved, by the North Carolina Board of Health and the Medical Society of the State of North Carolina in conjoint session assembled:

1. That as the special custodians of the health and lives of our people they desire to place on record their appreciation of the generous assistance in preventing disease, given by the State Board of Agriculture in the use of its laboratory, including the services of its bacteriologist, for making analyses of drinking-water suspected of causing typhoid fever, and other hygienic analyses, bearing all the expenses for two years and fully half for four years more, until funds could be secured for its support.

2. That the benefit to our people in the prevention of typhoid fever alone has, if computed in terms of dollars, exceeded many times over the amount expended, and they owe a debt of gratitude to the Board of Agriculture that should ever be remembered.

3. That these resolutions be spread upon our records and that a copy be sent to the Commissioner of Agriculture, with the request that he transmit it to his Board at its next meeting.

[Owing to the failure of the stenographer employed by the Medical Society to furnish his report to the Secretary of the same, there is no record of the discussions.]

MINUTES OF THE ANNUAL MEETING AT WINSTON-SALEM.

WINSTON-SALEM, N. C., June 16, 1908.

Annual meeting. Present: Drs. Thomas, Anderson, Way, Spencer, Register and Burroughs, Colonel Ludlow and the Secretary.

The minutes of the last meeting were read and approved.

Dr. Shore, Director of the Laboratory of Hygiene, read his report.

On motion of Dr. Spencer, the Secretary was authorized to employ an assistant bacteriologist.

The Secretary stated that by allowing part of her time to the Laboratory, he had reduced the cost of the stenographer to the Board from \$35 to \$25 a month.

On motion of Dr. Way, the Secretary and such other members as may attend were appointed delegates to the next meeting of the American Public Health Association, their expenses to be paid, if there should be money enough in the treasury after meeting the regular charges thereupon.

The President was authorized to appoint, at his convenience, committees to make the regular inspections of the State institutions.

Drs. Spencer and Register, who were appointed as auditing committee, reported that they had examined the accounts of the Treasurer and found them correct.

On motion, the Board adjourned, to meet in conjoint session with the State Medical Society at 12 M. to-morrow.

RICHARD H. LEWIS,

Secretary.

CONJOINT SESSION
WITH THE
STATE MEDICAL SOCIETY AT WINSTON-SALEM.

JUNE 17, 1908.

The State Medical Society was called to order at 3:30 with the President, Dr. J. Howell Way, in the chair.

THE PRESIDENT: The Society will be in order. We will now have the conjoint session of the State Medical Society and the State Board of Health. Gentlemen, I present the President of the State Board of Health, Dr. George G. Thomas, who will preside over the conjoint session.

DR. THOMAS: The conjoint session is now open for business. We will be glad to have the report of the Secretary.

ANNUAL REPORT OF THE SECRETARY OF THE NORTH CAROLINA BOARD OF HEALTH—MAY 1, 1907, TO MAY 1, 1908.

The health conditions of our State during the past year have been marked by nothing out of the common run, and the work of your Secretary has been chiefly routine. There have been some small epidemics of typhoid fever, and an investigation by the Board was requested by County Superintendent of Health Evans of one at Council, in Bladen County, and by Mayor Montgomery, of Reidsville, of an outbreak in that town. The former was investigated by President Thomas and the latter by Engineer Ludlow. Their respective reports are appended.

Tuberculosis has lost nothing in importance or interest. Our distribution of literature on the subject has, I believe, borne fruit in the education of the people as to the best methods of preventing its spread. In August last, at the request of the authorities, a committee of the Board visited the State Hospital at Morganton and advised with the management as to the location of special quarters for tuberculous patients. Their report is appended.

Although not under the control of the Board of Health, its Secretary is, *ex officio*, a member of the Board of Directors of the State Sanatorium for Tuberculosis, and a review of the health conditions of the State would not be complete without reference to it. Its establishment was authorized by the last Legislature, but it has been unavoidably delayed by the inability to secure a site suitable to the permanent establishment of so important an undertaking. Fortunately,

the necessary abandonment of one or more locations fixed upon, owing to the inability to secure a sound title, finally resulted in the selection and purchase of as nearly an ideal site as can well be imagined. Situated in the sandhills of Cumberland County, about eight miles from Aberdeen, it is traversed by the Aberdeen and Rockfish Railroad, and is, therefore, easy of access. The purchase contains about nine hundred acres, and its highest point, which has been selected for the location of the buildings, overlooks a wide panoramic view of at least three-fourths of a circle of miles upon miles of rolling pine forest. Work has been begun on the buildings, and it is hoped, I am told by Dr. Brooks, the Superintendent, that patients can be received in the early fall.

The International Congress on Tuberculosis, which is to meet in Washington, September 21st to October 12th, is an event of world-wide interest and will well repay a visit. I hope that many of our health officers and physicians will attend.

Smallpox has been slightly more prevalent than during the preceding year, the record being 2,011 cases, with 8 deaths, against 1,968 cases and 6 deaths in 1906-'07. During the past year the disease has been much more prevalent among the whites than among the negroes, which is just the reverse of the year before. To state it accurately: In 1906-'07 there were 620 white cases, with 2 deaths, and 1,348 colored cases, with 4 deaths; while during the past year there were 1,168 white cases, with 6 deaths, and 843 colored cases, with 2 deaths. The number of counties infected was just the same in each year—48. Owing to its continued mildness, and the fact that it has become such an old story—just ten years old—it produced little concern and practically no interference with business. The following is a tabulated statement, by counties:

SMALLPOX REPORT, FROM MAY 1, 1907, TO MAY 1, 1908.

COUNTIES.	Number of Cases.			Number of Deaths.		
	White.	Colored.	Total.	White.	Colored.	Total.
Alamance* -----	75	60	135			
Alleghany -----	6		6			
Beaufort -----	2	5	7			
Bertie -----	6		6			
Buncombe -----		3	3			
Burke -----	4		4			
Cabarrus -----	89	22	111			
Catawba -----	1		1			
Chatham -----	20	3	23			

SMALLPOX—CONTINUED.

COUNTIES.	Number of Cases.			Number of Deaths.		
	White.	Colored.	Total.	White.	Colored.	Total.
Chowan -----	100	100	200		1	1
Cleveland -----	8		8			
Columbus -----	2	1	3			
Cumberland -----	1		1			
Currituck -----	32	17	49			
Davidson -----	7		7			
Davie -----		55	55			
Durham -----	1	1	2			
Edgecombe* -----	12		12			
Forsyth -----	14	192	206			
Gaston -----	6		6			
Gates -----		5	5			
Guilford -----	109	72	181	2		2
Halifax -----		1	1			
Harnett -----	9	4	13			
Iredell -----	10		10			
Jackson* -----	75		75			
Johnston -----	150	75	225	1		1
McDowell -----	3		3			
Madison -----	37		37			
Mecklenburg -----	16	5	21			
Mitchell -----	40		40			
New Hanover -----	9	19	28			
Nash -----	2		2			
Orange -----	5	25	30			
Pasquotank -----		2	2			
Pender -----	3		3			
Randolph -----	14		14			
Robeson -----	4		4			
Rockingham -----	3	59	62			
Rowan -----	48	45	93			
Rutherford -----	11	5	16			
Sampson -----	2	1	3			
Wake -----	29	51	80			
Warren -----		6	6			

SMALLPOX—CONTINUED.

COUNTIES.	Number of Cases.			Number of Deaths.		
	White.	Colored.	Total.	White.	Colored.	Total.
Watauga -----	20		20		1	1
Wayne -----	35	4	39	1		1
Wilkes* -----	125	5	130	2		2
Wilson -----	3		3			
Yadkin -----	20		20			
Total in 48 counties -----	1,168	843	2,011	6	2	8
Death rate, per cent. -----				.5	.2	.39

*Estimated.

In compliance with the instructions of the Board, I have prepared a new and up-to-date edition of Instructions for Quarantine and Disinfection, and it will be mailed to all the physicians of the State as soon as I can get a complete and accurate list of them. This work is now in progress.

The chief and most important work of the year has been the reorganization and refitting of the State Laboratory of Hygiene, which, while a separate entity, is placed by the law under the control of the State Board of Health. Upon the retirement of Dr. McCarthy, we were fortunate in securing as Director of the Laboratory a man well educated academically and well trained technically, an M. S. of our own University and an M. D. of Johns Hopkins, with a biological laboratory experience of nearly ten years—Dr. C. A. Shore, who, by the way, is a citizen of this goodly town. We have been likewise no less fortunate in securing as chemist Miss Daisy B. Allen, who, I am assured by Dr. Herty, professor of chemistry at the University, has never been excelled, if equaled, by any graduate of that department during his incumbency. Thanks to the generosity of the Legislature, we were enabled to thoroughly refit the Laboratory with the most approved apparatus, and first-class work can be expected.

Those who have read the monthly *Bulletin* regularly will remember that the last General Assembly authorized the preventive treatment of hydrophobia by the Director of the Laboratory, when the Board of Health should think it wise to undertake it, provided the funds at their disposal should justify it without interfering with the regular work. With the \$2,000 annually appropriated by the last Legislature, in addition to the tax on public water companies, I believe this could now be done, to the great relief of many of our poorer citizens, unable to afford the expensive treatment of the various Pasteur institutes. This, however, would necessitate the employment of

a competent assistant, as the director, even now, has all his time occupied in the general work; but we can now afford it, and we recommend it. The report of the Director of the Laboratory accompanies this. As the Laboratory is intended for the benefit of the people, through the medical profession, it is hoped that the physicians will freely avail themselves of its help.

DR. THOMAS: Gentlemen, you have heard the report. Are there any remarks thereon? Then, if there is no objection, the report will go on file.

Gentlemen, it is my pleasure to introduce to you Dr. Charles Wardell Stiles, Ph. D., Chief of the Department of Zoology of the United States Public Health and Marine Hospital Service, who will give you a special address on "Soil Pollution, with special reference to Hookworm Disease."

DR. STILES: Before passing to the reading of my paper I wish to say that Surgeon General Wyman sends his best regards to the Association, with his best wishes for a successful meeting.

I have taken the liberty of changing my paper somewhat, although I shall speak on the same general subject as in the program. The title of my paper reads:

THE MEDICAL INFLUENCE OF THE NEGRO IN CONNECTION WITH ANEMIA IN THE WHITE.

MR. PRESIDENT AND GENTLEMEN:—In responding to your kind invitation to return to North Carolina and to address your meeting, I invite your attention to a certain phase of the same subject upon which I spoke before you several years ago. In my former address I discussed the general subject of hookworm disease. To-day I wish to speak on the negro as a factor in the spread of this malady, and his resulting influence upon the health of the white race. In bringing this subject before you, it is needless for me to state that I appeal to no race prejudice, but that I simply bring forward certain harsh, cold, scientific facts, which must be faced, not only in the interest of the white, but in the interest of the negro as well.

As many of you know, I have for some years past been especially interested in studying medico-zoological conditions in the rural districts of the South, and this work has led me to spend about a year living among the tenant whites. During these studies I have made

inquiries among all classes of people regarding their ideas relative to the origin of the present impoverished financial and physical condition of the "crackers," "sandhillers" and "barrenites," and the information obtained, combined with my own investigations, has led me to a conception of these people which is not altogether in harmony with the general opinion entertained regarding them. So far as I can analyze the subject, these people are the joint product of certain medical and industrial conditions, as follows:

In *ante-bellum* days, if a man was wealthy enough to own slaves, he was wealthy enough to own good plantation land. If not wealthy enough to own slaves, it is not reasonable to assume that he could buy the better class of farms. The latter people, therefore, would naturally be forced into the poorer lands, if owners, or to serve as overseers, to become tenants and, in general, to compete with slave labor. Such seems to me to be the most reasonable of the several explanations I have heard regarding the origin of these people. In different parts of the South they are known as "shad-bellies," "poor Bukra," "poor whites," "crackers," "sandhillers," "sand Billies," "barrenites," "poor Johns," etc.

The old-time negro had a great contempt for the white man who could not own a slave, and this contempt culminated in the expression, "poor white trash." This same contempt is reflected in the negro song, "I'd rather be a nigger than a poor white man."

The expression, "poor white trash," has become very well known, despite its offensive character, and, unfortunately, the average more fortunate whites, both those who know these people and those who have not seen them, have too commonly allowed their judgment of these people to become somewhat clouded by the judgment formed by the old slaves. In fact, very few persons have any sympathy for these people, who have been repeatedly referred to in my presence as "lazy," "shiftless," "good for nothing," "indolent," "untrustworthy," etc. One Southerner whom I recently met stated that he had had twenty-five years' experience with them, and that he considered "they were not worth trying to help." He was kind enough to inform me that I was wasting my time in living among them and studying their conditions. This reflects in an exaggerated form the average opinion I have encountered during my studies among these people, now carried on at various intervals for nearly six years, the total study amounting to about one year's time.

Actual experience among them for the purpose of scientific study, and actual association with them, involving sleeping in their homes, board with the "dirt eater" and "snuff dipper," playing with their children, visiting their schools, seeing them on farms, in mines, in mills, hospitals and orphanages, have led me to a conception of them which is different from the opinions just mentioned, and I am forced to take radical issue with any person who looks upon them as "lazy,"

"indolent" or "good for nothing," and I cannot refrain from expressing surprise that any man should have twenty-five years' experience with them and use so little intelligence and acumen as to come to the conclusion that they are "not worth trying to help."

Since these people are peculiar to the South, in order to understand them it is necessary to understand certain other factors which are peculiar to this same region. There are three factors in particular which come into consideration, namely: (1) the area under discussion presents the most intense negro population of any part of the country; (2) this area also presents the area of most intense hookworm infection; and (3) the same area presents the most intense malaria infection of any portion of the country. The question now arises:

In what relation do these four factors (the tenant white people, the negroes, hookworms, and malaria) stand to one another?

I need not argue to you the fact that both hookworm disease and malaria are found both in the white and in the negro, for this is well established. I may, however, invite your especial attention to an important point, too often overlooked, namely, that these two great anemia-producing diseases which are so severe on the white are relatively less severe on the negro race. This fact, that the negro presents a *relative* immunity to the *physical effects* of these two infections which are so common to his race, is one of very great importance, for it points us to a conclusion from which there is no escape, namely, that the negro race, forms a great reservoir for the supply of these infections.

Take malaria, for instance. It is a well-established fact that the malaria parasite is exceedingly common in the blood of negroes. It is a fact of common knowledge, which can be easily verified by any doubting Thomas, that the negro does not trouble himself very much to screen against mosquitoes. What is the result? Since the negro does not suffer from the effects of this infection so severely as does the white, the negro is not so likely as the white to come under medical treatment; accordingly, he is more likely to form a source of infection to the mosquito; add to this the fact that he does not screen against mosquitoes so much as does the white, and it is clear that relatively he forms a greater source of infection to the mosquito than does the white. Now, let a white man take what precautions he will against malaria in his family, the mosquitoes in the negro's house on the back street still form for this white man's family a source of danger, over which he has practically no control. The conclusion is evident: Theoretically and practically, the negro race, living side by side with the white race, is, when viewed from the standpoint of malaria, a great and serious reservoir of infection.

Take next hookworm disease. A given infection with this disease may put a white person in his grave or may make him so sick that

he remains at home, and it is likely to bring him under medical treatment. Thus this infection is either brought to an end or it is more or less confined to the immediate premises of this particular family.

That same infection will produce less serious physical results on the negro, who will, therefore, not be so likely to be confined at home, and he will not be so likely to come under medical treatment. The conclusion naturally is that, relatively, the negro is, and from theoretical conditions necessarily must be, a greater spreader of hookworm disease than is the white man.

The immense importance of this latter fact can be seen when we compare the white and the negro as a soil polluter. In this connection I would state that I have collected statistics for 366 farmhouses in North Carolina, South Carolina, Georgia and Alabama, and I find that of these 366 cases only 115 houses, or 31.4 per cent, were provided with privies of any sort; in other words, 251 of these houses, or 68.5 per cent, had no privy, and on this account the soil pollution on these premises reached a theoretical maximum. Of the 366 farmhouses in question my records show that 73 were occupied by whites and 83 by negroes, but I have no record of the race of the occupants of the remaining 210 houses. Of the 73 houses occupied by whites 56.1 per cent, or 41 houses, had privies, and 43.8 per cent, or 32 houses, were without privies. Of the 83 negro houses 20.4 per cent, or 17 houses, had privies, while 79.5 per cent, or 66 houses, had no privy. In other words, the theoretical maximum of soil pollution was reached in 43.8 per cent of the houses occupied by whites and in 79.5 per cent of the houses occupied by negroes. From these statistics it would appear that the negro is nearly twice the soil polluter that the white man is, and this conclusion is in harmony with what we know of the generally poorer condition of the negro privy, when one is present, and also with the complaints so often made regarding the pollution of alleys in cities by the negro.

Comparing the white and the negro, numerically, as an inhabitant, we find that in the States of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi and Louisiana the average ratio is 1,000 whites to 833 negroes. The ratio in these States varies between 1,000 whites to 494 negroes in North Carolina and 1,000 whites to 1,415 negroes in Mississippi.

From the foregoing data it is seen that in the area under discussion we have the following combination:

- (1) Two races (whites and negroes) are living side by side,
- (2) As inhabitants they bear the ratio of 1,000 whites to 833 negroes (a proportion of negroes far in excess of what exists in other States),
- (3) As soil polluters they bear the ratio of 438 (in whites) to 795 (in negroes),
- (4) Two diseases (hookworm disease spread by soil pollution, and malaria spread by mosquitoes) are present in high percentages.

(5) These anemia-producing diseases are especially severe on the white, but relatively less severe on the negro.

To my mind, the foregoing combination of facts leads inevitably to the conclusion that the white race in the South is living under a hygienic handicap which is not paralleled in any other part of the country, and, were it not for the greater intelligence and better financial condition of the whites, whereby they are able to protect themselves more or less against these diseases by sanitary measures, it would be only a question of a few generations before this handicap would exterminate the whites from those portions of the South which are especially favorable to these infections.

The whites of higher education and in better financial condition are able to protect themselves against this handicap, the burden of which has, therefore, fallen more especially upon that class (namely, the rural white tenant class) which has been kept in financial impoverishment through generations of competition with negro labor; and the result is exactly what theory demands it should be, namely, the present impoverished physical condition of so many thousands of the tenant white people, especially those living in the sandy and mountainous districts, where the sanitary arrangements are so inferior.

The physical condition of these people can be appreciated only by persons who have been among them. Those of us who have lived among them need not be surprised to find their blood from 10 to 70 per cent below normal, nor need we be surprised, upon entering a poor farm hovel, to foresee death, in many instances, in 40 per cent of the children (namely, 2 of the 5, or 4 of the 10 children of the family) before they reach twenty-one years of age. I visited one farm on which I found father, mother, five children, and fifteen children's graves. I asked the physician what had killed these fifteen children, and he replied: "I do not know what the disease is, but if you can tell me what is killing *that girl there*, you will know what killed the other fifteen children." "*That girl there*" was a severe case of hookworm disease, in the dirt-eating stage. Think of it, gentlemen; 75 per cent of the rising generation of this family had already paid the extreme penalty of soil pollution, and one further member of the family already had one foot in the grave!

Gentlemen, let any one call me a theorist if he will, but, in all fairness to the tenant white class of the rural sand and piney-woods districts of the South, let him first see the sights I have seen before he makes fun of those people and before he jokes about their sick and dying women and children. Before any man who claims to be humane considers these people "lazy," "good for nothing" and "not worth trying to help," let him reflect upon the following statistics, based on about 10,000 examinations I have recently made among this class of people:

(1) At least 13 per cent (women over 20 years) to 18 per cent (girls 16 to 20 years) of these women of maternity age are suffering from the anemia-producing hookworm disease, which prevents them from properly nourishing their babes.

(2) Of the girls under 16 years, at least 18.7 per cent have this same infection, which thus adds a serious strain upon their bodies (in addition to the strain incident to their sex) and which tends to retard their physical development, so that many of them reach maturity two to five years late; and even after they have reached maturity this disease renders them irregular in their menstrual functions.

(3) Of the boys under 16 years, at least 24.9 per cent have this same infection, which inhibits both their physical and their mental growth.

(4) Of the boys 16 to 20 years, 20.7 per cent, and of the males over 20 years, 5.8 per cent, show these same symptoms, which decrease their labor capacity and their military efficiency.

Now, my friends, in all kindness, let me submit to you a question for thoughtful consideration: Nearly half a century ago the country freed the slaves, but in these decades that have elapsed since then *what has our country done in order to better the conditions of the tens of thousands of the rural tenant whites who have been kept in financial poverty through competition with negro labor, and in physical poverty through the two great anemia-producing diseases for which the negro forms the great reservoir of infection?*

All honor to the few noble men and women who, by great personal sacrifice, are struggling to support efforts looking to a betterment of their condition; all honor to the few physicians who have let it be known that they will treat hookworm cases among these people without professional fee; all honor to the Southern cotton mill which is enabling thousands of these people to earn an honest living and thus to uplift themselves. But think a moment. *In comparison with what this country is doing for the negro of the South, for the Chinaman in Asia, and for other people of different races, what is our country doing in order to elevate these tens of thousands of people of our own race in our own country?*

Does it tend to elevate them if we refer to them as "lazy" and as "good for nothing"? Would it not help them more if we could send to the chain gang people who indulge in that kind of pseudo-wit?

Gentlemen, there is a rational solution to the problem before us, and I submit to you for consideration a plan which I maintain is well founded from a theoretical point of view, and feasible from a practical point of view. It is the same plan which I submitted a few days ago to the Alabama State Medical Association, and which the Association has unanimously endorsed. It is this:

Let us start out on the general principle that it is much easier to teach children than adults. With this truth in mind, I propose the

introduction of a "Public Health Week" into every schoolroom in the South. During this week let us utilize the class in physiology, in order to teach to the children the three great and fundamental principles of public health so important for the South. These principles are:

First, *Do not spit on the floor*, for this habit spreads tuberculosis and diphtheria.

Second, *Do not pollute the soil*, for this habit spreads typhoid fever and ground itch, with its resulting hookworm disease.

Third, *Protect against mosquitoes*, for mosquitoes spread malaria, yellow fever, dengue, and elephant foot.

Besides working through the schools, let us use every other means by which we can carry on a merciless campaign against soil pollution. In the last analysis, soil pollution is an evil in itself: it is in the nature of "*malum in se*"; it is an "aggravated offense against the public welfare"; hence it should be prohibited and made a crime, and any person guilty of polluting a highway or back alley should be sent to the chain gang.

Let us extend this campaign to the farms especially, and, if possible, persuade, but, if necessary, compel, the farmer to build a sanitary privy and to keep it clean.

Let us appeal to the clergy, to the lawyers, to the business men, and especially to the school teachers and the mothers, to join in this campaign. If I can gain the mothers of the South for this movement, and be given a chance to do so, I will agree to practically eradicate hookworm disease from the South in one generation's time, and by this eradication I will agree to elevate the condition of the rural tenant whites.

In conclusion, gentlemen, let me emphasize a very important point in the plan I propose, namely, that it is absolutely necessary to avoid any distinction between the whites and the negroes in this campaign of sanitary education, for—

(a) The white man who fails to recognize the important necessity of improving the sanitary conditions under which the negro is living fails to go to the root of the evil, and he unconsciously invites disease and death, especially to the women and children of his own race; while—

(b) The negro who fails to recognize the important necessity of improving the sanitary conditions under which the negro is living overlooks the fact that he is placing a very serious handicap in the way of a higher mental development of his race; for the point must not be forgotten that hookworm disease, in addition to its physical effects, to which the negro is *relatively* immune, has also a serious effect upon the mentality, and it has not been shown that the negro is immune to this latter effect.

DR. THOMAS: I would like to say that I owe Dr. Stiles an apology for my error in introducing him. He is well known to this Society.

DR. JULIAN: I am sorry that I did not get here in time to hear this very valuable paper of Dr. Stiles'; but some years ago Dr. Stiles came to my town and assisted me in eradicating hookworm disease at the Thomasville Orphanage. At the time he assisted me he was satisfied the box privy was the source of the epidemic. I reported the matter to the trustees. We pulled down the box privies, dug a deep well, have water throughout the building, and after a few months we have never seen a case of the disease.

DR. LEWIS: I wish to call to the attention of the Society that the Laboratory, as it already knows, is ready to make examination of the feces. All they have to do is to write the Laboratory at Raleigh for a container and send a sample of the feces to the Director of the Laboratory.

DR. JULIAN: The examination is very easily made by any doctor who is acquainted with the microscope, by introducing the finger into the rectum, getting a small amount of the feces, placing it on the slide, and in a few drops of water.

DR. THOMAS: We will now have an address by Dr. Tait Butler, State Veterinarian of North Carolina, on

OUR MILK SUPPLY AND SOME OF ITS RELATIONS TO PUBLIC HEALTH.

In accepting the invitation of your Secretary, Dr. Lewis, to read a paper at this meeting on the public or market milk supply of the State, I did so with a distinct purpose in view. It is, perhaps, telling no secret, and it is certainly not meant offensively, if I state that the average practicing physician is none too familiar with the real problems involved in putting into the hands of consumers a wholesome milk supply. But this, in my opinion, is not of great importance. It is not necessary, however desirable, that the physician possess expert dairy knowledge or that he be capable of performing the duties of a scientific dairy inspector. A much more important matter, as affecting any effort for the improvement of our milk supply, is that he have a full and accurate knowledge of the real importance of pure milk for the consumption of those under his care.

Many of those here have given special study to this subject. Others who are investigators have full knowledge regarding certain phases of it, but the general practitioners have not given that attention to the subject which its importance demands. Moreover, the general practitioner gets closer to the public than any other man, and it is through him that the general public can be best reached; therefore, in this paper I have decided to talk to the general practitioner and to assume the part of an agitator rather than an educator.

All freely admit the importance of a wholesome milk supply as a general proposition. But how many know fully and accurately the awful results of our criminal neglect in the past along this line? How many have an accurate knowledge of the quality, or lack of quality, of the milk now being sold throughout the State? How many realize the full measure of filth which it carries, and what that means in misery and death to the innocent babes who must consume it?

Gentlemen, it is not the ravings of a fanatic nor the extravagance of a sensationalist, but a conservative statement of terribly serious facts when I say to you that the almost total ignorance of dairy science on the part of our milk producers, the lack of knowledge of what constitutes first-class milk, and the care it should receive on the part of consumers, and the almost criminal indifference and inertia of the medical profession, who are the accepted guardians of the public health, are seeds, the awful but legitimate harvest of which are ill health, misery and death to hundreds upon hundreds of innocent consumers during our long, hot summers.

The indifference of the public generally, and the indifference and inactivity of the medical profession in particular, along the lines of milk and meat inspection, are little short of tragic, and I wish I might say something that would help, in a small way at least, to arouse and increase interest in this long-neglected branch of sanitation.

There are three general ways in which the milk supply may have a direct relation to the public health:

1. It may be a means of carrying and transmitting disease from man to man—such, for instance, as typhoid fever, diphtheria, scarlet fever, cholera, etc.; but of these phases of our subject I shall take for granted you are better informed than I, and omit their discussion.

2. Milk may be a means of carrying and transmitting disease from cows to man, such as tuberculosis, anthrax, foot and mouth disease, cowpox, etc. Of these, one alone is common—tuberculosis—of which I shall have something to say later.

3. Milk may cause disease in man by conveying disease-producing agents or materials, such as filth and the conditions which it favors for the growth of bacteria and the development of toxins and other deleterious substances; also the products of mammitis and other septic troubles.

Of the distinct diseases affecting the cow, which also affect man and which may be communicated from one to the other, tuberculosis is of first importance.

When Koch discovered the bacillus of tuberculosis and proclaimed the identity of bovine and human tuberculosis, there was little hesitancy in accepting a conclusion so closely in harmony with the experience and observation of scientific workers in both human and veterinary medicine. Later investigators called attention to the difficulty in transmitting human tuberculosis to bovines, and still later the fact was pointed out that the bacilli from bovine and human sources often possessed morphological and cultural peculiarities sufficient to differentiate them; but when Koch followed, in 1901, with the remarkable declaration that bovine and human tuberculosis were different and not intercommunicable, few scientific investigators were willing to accept the *dictum* on the insufficient evidence produced, and at once investigations were started all over the civilized world to determine the truth or falsity of Koch's declaration. In the meantime progress towards preventing the communication of bovine tuberculosis to man received a decided setback.

The results of the investigations, stimulated by Koch's dogma, indicate, as clearly as the nature of the case will permit, that bovine tuberculosis may be and is communicated to man.

It has been shown that the bacillus from human tuberculosis is capable of producing tuberculosis in many animals, but for no animal, unless man is the sole exception, is it so virulent as the bovine germ. If the bovine bacillus is more virulent for all other animals, including monkeys and apes, it very logically follows that it probably is also more virulent for man than the human bacillus.

Of course, Koch has not recanted. He still maintains the position taken in 1901, but the fact is now pretty generally recognized that bovine tuberculosis may be a source of danger to man.

The next question to arise was, naturally, To what extent is bovine tuberculosis a source of infection to man?

In their efforts to show that bovine tuberculosis was rarely communicated to man, the fact of the greater frequency of pulmonary than abdominal tuberculosis was pointed out, and the claim that intestinal tuberculosis of children, the greatest consumers of milk, was rare, were made much of.

Recently much evidence has been developed showing that intestinal or abdominal tuberculosis of children is not so rare as claimed by those who maintain that bovine and human tuberculosis are not intercommunicable.

And still further to the dismay of those who cling to old beliefs because they are old, even the time-honored assumption that the chief mode of entrance of the infection agent is through the inhalation of germ-laden dust particles has been challenged and met with an array

of facts and reason which may well receive serious consideration by all those interested in the question of the relation of the milk supply to the public health.

It has been clearly shown that the introduction of the bacillus into any part of the body—blood vessels, intestines, abdominal cavity, or even a part so remote as the tail of the cow—is generally followed by thoracic tuberculosis, instead of necessarily tuberculosis at the point of entrance or of nearby organs.

Again, when tuberculosis of the intestines is found, especially in children, the bovine germ, which may be recognized, is frequently found in these cases of human tuberculosis. Is this not more than passing strange if the bovine germ does not produce tuberculosis in the human?

In short, recent investigations show plainly that not only is bovine tuberculosis communicated to man, but that this is probably not so uncommon as the comparative infrequency of abdominal tuberculousis was thought to indicate.

To question the old inhalation theory of the entrance of the tubercle germ from sputum, pulverized, is, I know full well, among the medical men here, likely to lessen the respect which you will have for the other statements I may make, but I cannot resist the temptation to state that it never did have any scientific evidence worthy of consideration to support it.

It is an old, well-known fact that drying and sunlight rapidly kill tubercle bacilli. One hour of sunlight will kill tubercle bacilli in transparent layers of sputum, while five hours exposure to sunlight will kill the bacilli in thick opaque layers. Sputum is mixed with mucus, is tenacious and hard to pulverize, unless thoroughly dried. Yet we accept the statement that tubercle bacilli resist this drying and pulverizing process to such an extent that this way, and this way almost exclusively, is tuberculosis thought to be introduced into the human system. The theory is not only not supported by facts, but is most unreasonable. Furthermore, if the tubercle germs enter by way of the air cells, why is it that tuberculosis starts in the capillaries instead of in the air cells? Why is it that tuberculosis starts in the apex of the lung, where there is a smaller proportion of air cells than in the base of the lungs?

Another discovery has recently been made, namely, that probably before the tubercle bacilli are expelled from the body in any considerable numbers through other channels, they may exist in large numbers in the manure. Years ago, I remember reading in Novy's "Laboratory Work in Bacteriology" that there was a bacillus frequently found in cow manure that stained like the tubercle bacillus—very much like it, indeed, because it probably was the tubercle bacillus.

Now, the chief filth in milk is cow manure. That cowy odor is usually plain, vulgar, filthy cow dung.

In the face of these facts, what is our position? We know that tuberculosis exists in our dairy herds; we know that when tuberculosis exists in a herd, owing to the passage of the bacilli through the udder, and through the intestines and manure, which almost always contaminates the milk more or less, milk from such a herd is almost certain to contain tubercle germs. We know that infants, the largest consumers of milk, have intestinal tuberculosis more frequently than adults, and that the bacillus causing this disease is frequently of the bovine type. In short, we know that our neglect to exclude tuberculous cows from our herds is causing the death of many human beings, and yet we are doing nothing, literally nothing, to prove ourselves worthy the title of guardians of the public health.

The tuberculin test is the only means of detecting tuberculosis before the products of the cow are likely to be infective, but we are not forcing the dairymen of the State to do what is to their own financial interest to do—test their cattle and exclude the tuberculous animals.

Tuberculosis is not over common in this State, except in the dairy herds, and is not as prevalent there as in many States, but it will steadily increase unless controlled. Moreover, if we admit its *existence* even, and the *possibility* of its communication to the consumer of milk, we have no right to stand idly by and permit any human being to take that chance, no matter how small the chance may be.

In my opinion, diseases of the udder and those conditions of milk included under the general term "filthy" are the most fruitful source of injurious effects upon the consumers of milk. All forms of garget, mammitis or other diseases resulting in pus and other inflammatory products entering the milk are unquestionably the source of much of the diarrhoeal troubles of infants resulting from the consumption of impure milk. Filth, manure from the cows and stables, which is the most abundant and common contaminating material of unclean milk, has not, in my opinion, been given its full share of responsibility for the high death rate from diarrhoeal diseases, so fatal to young children. Especially is this so in North Carolina.

In short, tuberculosis, diseased udders and filth are the three main sources of danger to the consumers of milk in this State.

How are these conditions to be corrected? In the first place, clean milk is worth more than dirty milk, and it costs more to produce it. Are our people willing to pay for clean milk? I believe we are now paying a price—eight to ten cents a quart—which entitles us to a fairly good quality of milk. If this is not enough to enable the producers to put clean milk on the market, then you, the guardians of the public health, must educate the public up to the point where it will pay for good milk.

In the second place, few of our dairymen know sufficient of dairy science and practice to enable them, unassisted, to put clean milk on the market. The general supply of milk can be improved, but for

many years yet cannot be brought up to the standard necessary for the feeding of infants and sick people. Comparatively few men anywhere are able to put such a quality of milk on the market. What is to be done?

First, start here to-day such a campaign for pure milk as will arouse public opinion, stimulate dairymen to greater efforts, and result in a competent milk inspection and supervision in every town of 3,000 population in the State. This can be done, and will improve the general condition of the milk supply. In every town where the demand will justify let a certified milk commission be established to encourage some one or more men to produce and put upon the market a first-class milk product. And, last, as a temporary and doubtful expedient, if filthy milk must still be consumed by many, establish under municipal control, where conditions render it practicable, a pasteurizing plant, where all milk below a certain standard must be pasteurized before being sold. Pasteurizing will not make unclean milk clean, but it may lessen its injurious effects. If generally adopted, it is likely to encourage filthy practices rather than correct them. It probably lessens the digestibility of the milk, and is only advisable as the lesser of two evils. As between reasonably clean milk and pasteurized milk, there is no question in my mind of the superiority of the former, but if it is still necessary to put up with dirty milk, then by all means pasteurize. The chief objection to it is that its use is likely to prevent as great an effort to secure clean milk as would be made were pasteurizing not practiced.

How is the general quality of the milk supply to be improved?

First, by a proper system of inspection. Three forms of knowledge are requisite for competent milk inspection—first, a knowledge of cows in health and disease—possessed by the veterinarian; second, a knowledge of dairy science and practice, which should be possessed by the so-called practical dairyman, but in our State rarely is; third, a knowledge of milk, bacteriologically, chemically and microscopically.

The milk inspection of a municipality may well be administered by a milk commission; but if so, it should be made up of men chosen for their knowledge of the work. For such a commission a physician, a practical dairyman and a veterinarian are logically competent men. Or the administrative part of the work may be left to the city health officer; but the success and efficiency of any system of milk inspection depends on the efficiency of the inspector and the quality of the laboratory work done.

First, there should be a frequent and thorough veterinary inspection of the cattle. The inspector should also be a practical, scientific dairyman who has had experience in dairying. If it is claimed that such a man cannot be employed, then the milk inspection will fall short of a full success just to the extent that the inspector falls short of these requirements.

Our dairymen are not desirous of putting filthy milk on the market, but they don't know. The inspector must be able to *teach and lead*, rather than try to *force* rapid changes.

In most instances too much importance or reliance is placed on laboratory examinations. These are essential, but they will not take the place of frequent and competent inspections of the dairies and the manner of handling the milk. Bacteriological examinations should be made, for unquestionably a high bacterial content is indicative of a high filth content. If there be a high bacterial content, then the inspector must seek the cause and correct it. He must have accurate *dairy* knowledge and practical experience to do this.

A microscopic examination may be made, for a high leucocyte and streptococci content, with the presence of fibrin, which indicates inflammation of the udder, but this is of most value when examinations are made of the milk of individual cows.

In the city of Raleigh we have a so-called milk inspection, which is practically nothing more than a bacteriological examination and publicity of the results or findings. No competent inspector is employed, no tuberculin test is made of the cattle, and a violation of the regulations does not usually mean any sort of punishment; but, with all this, good has been accomplished. For instance, in 1906, after a complete neglect of duty for three months, the commission was forced to make a pretense of doing its duty by public criticism through the press, and from March 27 to April 27, 1906, fifty samples, the first taken after this period of neglect, gave twenty with a bacterial count of over 1,000,000 per cc. From March 27 to April . . . 1907, fifty samples gave seven with a bacterial count of over 1,000,000 per cc. From March 26 to April 28, 1908, fifty samples gave eight with a count of over 1,000,000. In September, 1905, ten samples gave an average bacterial count of 1,111,500 per cc. In September, 1906, ten samples gave an average count of 846,600 per cc. In September, 1907, ten samples gave an average count of 164,000 per cc. In August, 1906, twenty-three samples gave an average count of 2,570,000. In August, 1907, nine samples gave an average count of 890,060 per cc.

An improvement, but what filth still exists! Fancy, during the months of March and April, milk from three to five hours old, in which sixteen per cent of the samples have from one to two million bacteria to the cc!

A bacteriological examination of milk is of importance, but its chief value is lost unless supplemented by and done in co-operation with an intelligent dairy and cattle inspection. A high bacterial count means either age or filth, and large numbers of liquefiers mean in all probability filth, and, where dairies are not of fairly good grade, dairy practice rather than age influences most the bacterial count.

We must keep in mind that a healthy cow gives a wholesome product of fairly uniform quality. If the milk is put on the market in

bad condition or of greatly varying composition, it means bad dairy practice. Very frequently I hear of this physician or that one who insists that the cow shall receive no cotton-seed meal, or no silage, or some other excellent food is tabooed. I have heard of this sort of thing in our city of Raleigh, and yet our system of handling milk makes it almost certain that the fat content of the milk from any one dairy may vary from 2.5 to 8 per cent.

This has actually occurred, and is due to the fact that milk is sold from a large can instead of being bottled at the dairy. The faucet being at the bottom of the can, and the cream rising to the top, the customers first served get the 2.5 per cent milk, while the last get milk containing 8 or 10 per cent butter fat. No sort of feeding will produce a change of over one-half of one per cent in the butter fat content. In fact, it is doubtful if any effect on the fat content can be regularly and consistently produced by any sort of feeding; therefore, it will avail most to give more attention to the handling of the milk, for it will certainly mean discomfort, if nothing more serious, to any delicate infant to receive 2.5 per cent milk to-day and 8 per cent milk to-morrow.

Good milk will not be put on the market until the dairyman is required to bottle it at the dairy, under proper sanitary and dairy conditions.

Some of the points that need attention in our North Carolina dairies are:

1. Test all cows with tuberculin, and exclude the diseased ones. The North Carolina State Department of Agriculture will do that free of charge, on certain reasonable conditions.

2. Institute an intelligent inspection of the cows, and exclude all those with any disease of the udder.

3. Prohibit the selling of milk except in bottles, and require that the milk be kept below a certain temperature.

4. Prohibit feeding during or just before milking.

5. Compel dairymen to keep their cattle clean. Cows can be cleaned, but milk cannot.

6. Compel dairymen to wear clean clothes and wash their hands before milking.

7. Wipe the udders off with a damp cloth and use a covered milk pail.

These can only be brought about by an inspector capable of leading and teaching. We cannot have entirely clean milk at once, but we might have cleaner milk with an intelligent effort.

As an illustration of how the cleanliness of milk is influenced by dairy practice, as indicated by the bacterial count, I desire to present the following charts, the data for which have been taken from bulletins No. 42 and No. 48 of the Storrs (Connecticut) Agricultural Experiment Station.

It has been stated as an excuse for the filthy milk which so many of our dairymen are putting on the market that, from lack of knowledge, capital or other facilities, they could not produce and put clean milk on the market. These charts show that certain practices produced a wonderful improvement in the quality of the milk, as indicated by the bacterial count, and yet all these things could be done by our dairymen. They are all simple, practicable and inexpensive.

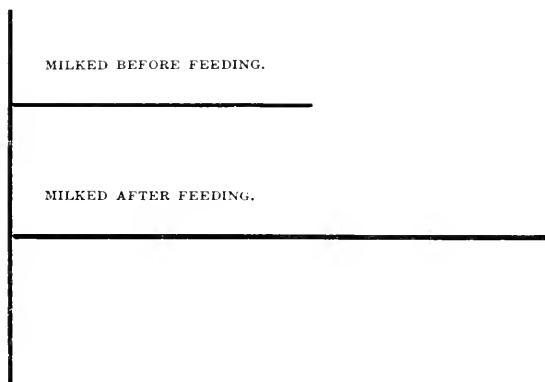


Diagram showing relative bacterial content of milk drawn before and after feeding hay and grain.

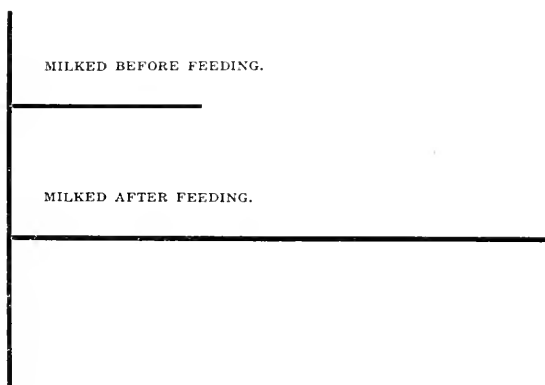


Diagram showing relative bacterial content of milk drawn before and after feeding dry corn stover.

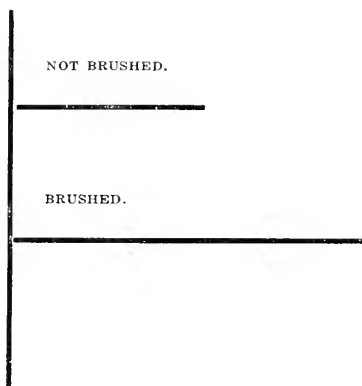


Diagram showing relative bacterial content of milk drawn immediately after the cows had been brushed and when no brushing was done at that time.

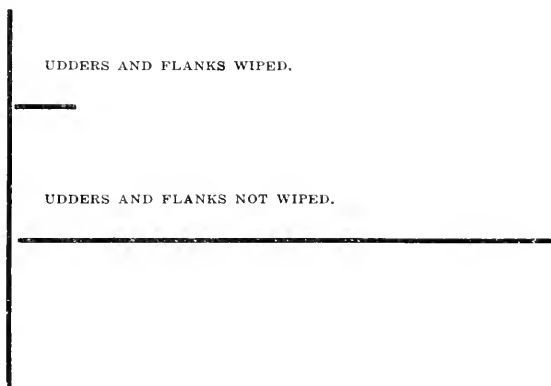


Diagram showing relative bacterial content of milk drawn immediately after the udders and flanks of the cows had been wiped with a damp cloth, and when they were not wiped.

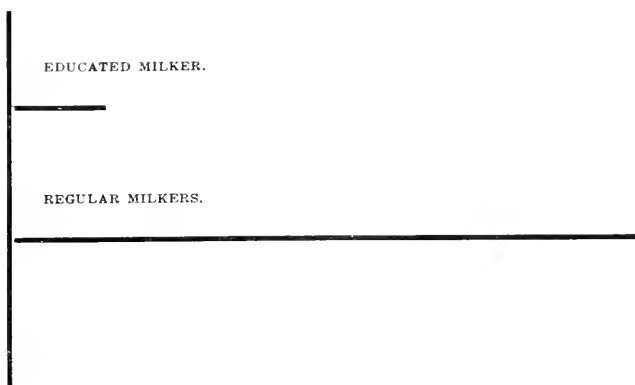


Diagram showing relative bacterial content of milk drawn by an educated dairyman and that drawn by regular milkers.

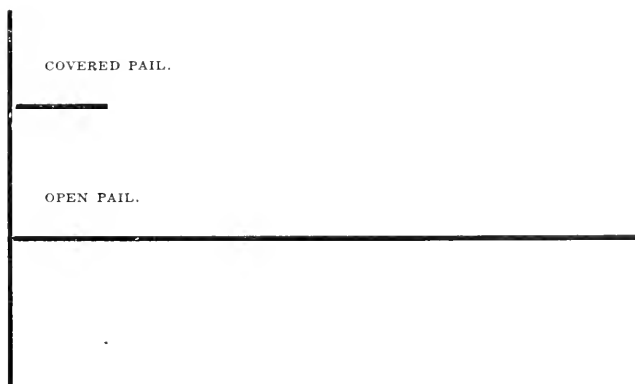


Diagram showing relative bacterial content of milk drawn into a Stadtmueller covered pail and into an ordinary open pail, in a dairy where extra care is given to cleanliness.

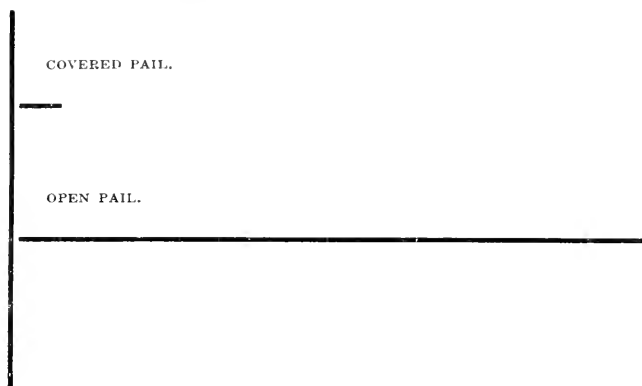


Diagram showing relative bacterial content of milk drawn into a Stadtmueller covered pail and into an ordinary pail, in a dairy where considerable care is given to cleanliness.

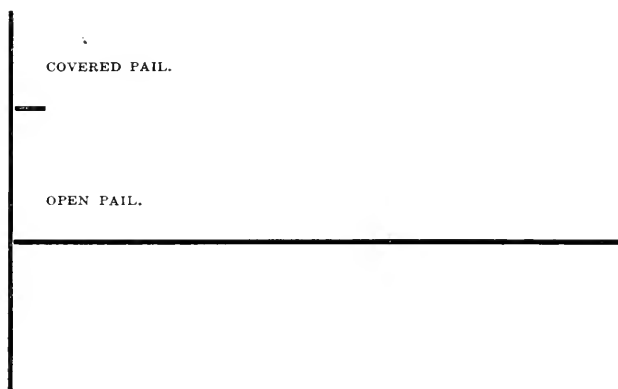


Diagram showing relative bacterial content of milk drawn into a Stadtmueller covered pail and into an ordinary pail, in a dairy where little care is given to cleanliness.

In all of the experiments furnishing the data upon which these diagrams are based, more than ordinary care was taken to follow correct dairy practices. In all experiments, except in the ones comparing open and covered pails, the Stadtmueller covered pail was used, and all other conditions except those being tested were as near alike in all cases as it was possible to make them. In dairies where little

regard is paid to cleanliness the results would still more forcibly demonstrate the effects which the methods of handling the milk has on its cleanliness and the bacterial count.

DR. SILVIO VON RUCK, Asheville: I have listened to Dr. Butler's paper with much interest, but he has made many statements which are radical and not proven.

He tells us that tuberculosis is transmitted from cattle to man with great frequency, and even that bovine tuberculosis is the almost exclusive source of infection for man, while human infection through sputum is of little importance.

He has misquoted Professor Koch, who did not state that infection of man by milk of tuberculous cows could not happen at all. Koch announced at the London Tuberculosis Congress in 1901 that he had not been able to produce infection in cattle with tubercle bacilli of human origin; that the human and bovine type of bacillus were not identical; that in the light of the rarity of primary intestinal tuberculosis and reasoning by analogy he did not believe that human infection from bovine sources was of frequent occurrence. He did not deny that it might never occur.

There are two sides to this question, one of which Dr. Butler has entirely ignored; and aside from bacteriologic investigations and animal experimentation, we have much evidence in support of Koch's position. This also requires consideration.

For example, it is well known that in Japan, before foreign cattle were imported, bovine tuberculosis was not prevalent. Further, the number of cattle in proportion to the population is so small that milk is not an ordinary article of diet. Nevertheless, Japan has shown and continues to show as great a pro rata mortality from tuberculosis as other countries. In Sweden and Norway, where almost all children are nursed by their mothers, there is as great a percentage of tuberculosis mortality as in countries where cow's milk is more commonly used for infant feeding.

In Berlin records have been kept of the method of feeding infants, and the number of deaths from tuberculosis is equally divided, as shown by statistics cited by Fraenkel, between those who were nursed by the mothers and those who were fed on cow's milk.

There is much more evidence of like character which tends to show that the tuberculosis of cattle is not the great source of danger that has been asserted; but an actual experiment on man has been made, although at the time not with the view of determining this question.

Baumgarten has given us the details of it. Based upon Rokitsansky's theory of the antagonism between tuberculosis and cancer, a number of patients suffering from inoperable malignant disease were inoculated with bovine tubercle bacilli in the hope that their malignant disease might thereby be favorably influenced. All eventually died of their malignant disease, and Baumgarten performed the autopsies. He found no evidence of tuberculosis, and even critical microscopic examinations failed to reveal tubercle or tubercle bacilli.

As Dr. Butler has stated, it has been found that primary intestinal tuberculosis is not quite as rare as was supposed at the time Professor Koch made his announcement in London, but while the thoracic glands may become affected as a result of ingestion of tuberculous material, this, according to all results and investigations, is rare. It is generally conceded that by whatever route the bacillus enters, be this by ingestion or by inhalation, the first localization occurs in the nearest regional lymph gland. However, since 1901, the subject has been most carefully and painstakingly studied at the Imperial Health Bureau in Berlin and elsewhere, and it has been proven conclusively that in the majority of cases of primary intestinal tuberculosis the tubercle bacilli isolated from the intestine or mesenteric glands were of the human type. Up to the present time the cases in which bovine infections have been proven to have occurred in man are about

33 in number, 18 of which have been examined at the Imperial Health Bureau, while 15 are reported by other observers.

Apart from any danger to man from tuberculosis of cattle, the question is of importance from an economic standpoint as well, and if, as appears, the danger to man is but little, it should not be necessary to destroy hundreds and thousands of cattle simply because they be shown to have acquired tuberculosis.

Besides, as Professor Koch points out, we can protect ourselves from such danger as may exist by boiling the milk and cooking the flesh of such cattle as are or may be tuberculous.

With Dr. Butler's views as to the importance of cleanliness in our dairies, I am heartily in sympathy. Irrespective of the tuberculosis question, clean milk is essential, and for many other reasons we should use our influence to obtain it.

DR. BURROUGHS, Asheville, N. C.: Mr. Chairman, I have listened to Dr. Butler's paper with interest. But there are one or two points on which I think that the doctor, as our State Veterinarian, has not been sufficiently explicit.

I wish to state that no tuberculous cow should be milked nor is milked at any dairy that produces healthful milk. The herds are usually tested every six months. And all additions to herds are tested before being allowed to mingle with the cattle already tested.

Dairy cattle of Asheville are under the direct supervision of a veterinary surgeon; and all milk is under the supervision of one man, who tests milk at his will, with full authority to act.

The cattle are kept on the hills and in the valleys a portion of the day and also a part of the night. And the milk is collected twice daily.

The cattle are driven to a large corral with a shed attached to the stables where they are fed. In this shed the cattle are brushed off, and while they are being fed their teats are washed with an antiseptic solution. Following this come the

immaculately dressed milkers with strainer pails. The milk is then carried to the chemist, with his assistants, where it is standardized according to the requirements of Mr. Wilson in the Department of Agriculture of the United States Government. The milk is then iced and delivered in sealed glass jars.

One statement made in Dr. Butler's paper I do not understand, and I am certain that other members of the conjoint session do not understand, which I wish the doctor to explain, and it is this: that "thoracic tuberculosis is very frequently contracted from the cow's tail." (Laughter.)

DR. BUTLER *closes*: Just a word in reply to the gentleman's (Dr. Burroughs') thrust. I didn't say it.

I know I didn't cover this subject thoroughly. If I had I would have kept you here until to-morrow morning. I stated in the start I wasn't going to talk to the specialists and investigators, but to the general practitioner.

I could meet Dr. Von Ruck's statistics with statistics if time would permit. I could tell you of investigators who have found as high as 41 per cent of the abdominal tuberculosis of children of bovine origin, but I did not have time to do it or to go into this matter fully.

I wanted to say further—and I thought I made that point clear—that the old idea that you can tell the mode or channel of entrance of the tubercle germ by the location of the lesion is no longer tenable. It is nonsense to say, because you find tuberculosis in the lungs, that the germ necessarily entered through the air passages. I said you could put the germs in the tail of the cow and the chances were the tuberculosis would develop in the lungs, not in the tail. Why? Because tuberculosis is primarily a disease of the lungs, and the germs go to where they like to live. They find the most suitable place for their development. You can inject the tubercle germs into the abdominal cavity, and you may feed them through the mouth; you may put them into the circulation or into any part of the system, in any way you like, and in the majority

of cases you will get tuberculosis in the lungs. That is what I meant to say. Thank you.

My paper is better explained with the drawings given the Secretary.

DR. THOMAS: Gentlemen, the next subject to be presented is "Pellagra," by Dr. E. J. Wood, of Wilmington, N. C.

PELLAGRA.

Pellagra is a disease supposed to be due to an intoxication derived from diseased maize and characterized by a triad of symptoms: symmetrical erythema, gastro-intestinal disturbances, and various nervous and mental manifestations.

Spain was the first country in which pellagra was recognized. This was in 1735, and the disease was regarded as a variety of leprosy. The disease later appeared in Galatia, and later in Castilia, Rome, and Aragon. To-day it is very prevalent in Navarre and Galicia. The name *lepra asturiensis* was one of the many by which it was known. Next the disease was noted in the northern provinces of Italy. Trapalli, in Lombardy, gave the name *pellagra* (pelle and agra, rough skin).

At the present time pellagra is very prevalent in Roumania. In 1882 there were 4,500 cases; in 1888 there were 10,626 cases out of a population of 5,339,650; in 1894, 6,694 cases; in 1896, 19,796 cases; and a more recent estimate places the number above 50,000 cases, who were affected with the disease in some stage. It also occurs in the south of France. Since 1856 it has been present in Corfu. The Asturias are still the chief seat of the disease in Spain. One sporadic case is said to have occurred in England.

When the disease first appeared in Italy it was in the neighborhood of the Lago Maggiore. During the last century it extended into Emilia and Tuscany. In central Italy it is little known and in southern Italy and Sicily is unknown.

Bouchard describes the disease in Mexico. It has occurred also in Brazil, Argentine Republic, and Uruguay. Many cases have been reported in Egypt and some in South Africa.

The disease has almost disappeared from France, but there are still small areas in the Pyrenees and in Garonne.

Sporadically cases have been seen in the Tyrol, Servia, Bulgaria, Greece, and Asia Minor.

Italy and Roumania are considered the disease centers. In Italy it is endemic. According to a reliable source there were 100,000 cases or 10 per cent of the rural population affected with pellagra.

The disease was supposed not to occur in this country, and many of the best text-books fail to mention it. Probably the first article

on the subject appeared in the *Journal of the American Medical Association* for July 6, 1907, by Dr. G. H. Searcy. The disease appeared, according to this report, in 1901, in Tuscaloosa, Alabama, but at the time was not recognized. In 1906 there occurred in Mount Vernon, Alabama, 88 cases of acute pellagra, with a mortality of 57 or 64 per cent.

In 1905 the disease was present, unrecognized, in Wilmington. Certainly as far back as 1900 there was a case in Jones County.

Dr. James McKee, Superintendent of the State Hospital for the Insane at Raleigh, has kindly furnished me with notes of three cases under his care, and suggests the possibility of the disease having been present in the institution for a number of years.

Dr. R. H. Bellamy, of Wilmington, at the recent meeting of the American Medical Association reported ten cases.

Dr. J. C. Gilbert, of Hope Mills, in a letter to Dr. Bellamy reports seven cases under his care.

Certainly there have been thirty cases in North Carolina. It is probable, however, that the correct number will run into hundreds. It is also probable that the disease is rapidly increasing. We have many reasons to believe that the disease has existed in North Carolina for some years, but that these cases were sporadic; otherwise the condition would long ago have been recognized. As there has been an increase from a few sporadic cases to a number which is daily increasing, the question of the disease becoming endemic with us must be seriously considered.

Pellagra seems to be generally distributed throughout the South. Merrill reports a case from Colorado, Texas, and Babcock reports nine cases occurring in the Hospital for the Insane in Columbia, S. C.

SYMPTOMATOLOGY.

Weeks and even months before the appearance of the erythema of pellagra there may be symptoms which, while usually very indefinite, would lead one in a pellagrous region to make the diagnosis, provisionally, of the disease. There is often progressive weakness, especially of the feet and legs, gastric disturbances and loss of appetite. Roussel regards the loss of appetite and gastric disturbances as complications, and dryness and burning of the mouth with a sensation of heat in the stomach which may develop into a true pyrrhosis as the first symptoms of the disease. Further, he considers voracious appetite, vomiting, cardialgia and diarrhoea of purely nervous origin. Besides these symptoms there are vagabond pains in the extremities and back, tinnitus, weakness of vision, general *malaise*, especially in the mornings; sometimes pain in the joints. Headache, vertigo and melancholia follow.

In many respects these symptoms are common to the whole group of acute infectious diseases; but still, when headache, vertigo, sensa-

tions of weakness, especially in the lower extremities, are present, often accompanied by diarrhea and occurring about the middle or end of winter, our suspicions at least should be aroused.

According to Theodori, about four weeks after these pellagrous symptoms occur the unmistakable signs of the disease appear. This period is often much longer, in some instances being as much as a year.

The first skin lesion almost always appears in the spring and the parts affected are usually those parts exposed to the sun's rays. Many of the best observers think that as an etiological factor the rays of the sun have little effect. Among these are no less authorities than Procopin and Tuczak, to whose works we are much indebted for our information. Many other writers think that the violet rays are certainly a predisposing cause of the skin lesions, if nothing more. The last word on the subject has not been said. In our cases we are disposed to belittle the solar influence: (1) Because the disease appears with us so early that we can exclude any very intense action: (2) in some cases it appears over the sternum, in the vagina, and in patients who have been in bed for days and weeks with a pellagrous lesion on the hands and face we see the extension to the feet, even though previous to their admission to the hospital they had not gone barefooted.

The skin lesions usually appear first on the back of the hands over the metacarpal region, either with a swelling and a red spot in the center or else with a diffuse redness. Oftentimes blebs appear. The blebs contain clear, alkaline serum, which is sterile. After the hands the face is usually more apt to be affected. Here the lesion begins symmetrically either at the outer canthi of the eye or at the angles of the mouth. It is common to have it symmetrically situated on the forehead in two patches, which have a narrow vertical strip of healthy skin between. Beneath the lower lids and at the back of the neck are favorite places. In the latter situation the lesions extend anteriorly until they nearly meet in front, forming a collar which is higher behind. In our limited number of cases we have found the face and neck lesions much more commonly in females, and especially children. The next spot selected is the top of the feet. Our last case has the two varieties of lesions occurring simultaneously. Just below the external malleolus there is a bleb on both feet, which began as two round, red spots about the size of a fifty-cent piece. In ten days a bleb appeared which, after drying up, left a raw surface. In the same case, over the crest of the tibia, extending downward over the metatarsal region to the lower articulations of the toes, is a diffuse redness much resembling a lymphangitis.

This lesion will probably go on to exfoliation without bleb formation. In some cases the lesion may appear over the sternum, and in two of our cases the labia pudendi were affected by the typical

lesion. The disease has been known to make its first appearance on some covered portion of the body, but this is exceptional. In none of our cases did it appear there until long after its more usual appearance on the exposed parts. In the lesions with blebs there is left a raw surface which either forms an ulcer or is covered by crusts, which often are quite thick. The crusts and the weeping ulcerated areas, together with the odor, make a loathsome patient. With the beginning of healing, the skin of the face contracts so that in one case there was a marked ectropion and also inability of the lips to cover the teeth. The photograph shows the condition well, but it became much worse as the disease progressed. Usually, especially in the dry cases, exfoliation begins after three or four weeks, and as the dead skin comes away a pigmented area is left. This pigment varies from a slight yellowish tinge to a dirty brown or even a chocolate color. The depth of color depends upon the duration of the disease, that is, on the number of the attacks. In addition to the pigmentation, the skin is shining and atrophic. By fall the skin regains more or less of its normal tone, only to be ready for the next attack the following spring. With each attack the skin becomes more atrophic and more pigmented.

INTESTINAL TRACT.

With the appearance of the erythema, or soon after, the mouth becomes affected. The mucous membrane is red and swollen, the lips may be covered with blisters, and later they become cracked and seared. The tongue is intensely red and the papillæ enlarged, with furrows between. The patient complains often of burning and salty taste in the mouth, often with an increased flow of saliva.

Dr. McKee says the mouth suggests to him *stomatitis materna*. Salivation is often intense, and in one of our cases we suspected pyalism. After the skin lesion the mouth condition is the most constant, and in none of our cases was it absent. In some cases it subsides after the first few weeks; in others it persists throughout.

In all of our cases the stomach was not affected. Pyrrhosis, eructations, vomiting, anorexia or bulimia, often with extreme thirst, are common symptoms. In some cases the gastric analysis shows an absence of hydrochloric acid, while in others it is normal.

Much more commonly present is obstinate bloody diarrhœa, often of a dysenteric type, usually attended with colic. This diarrhœa is considered by many to be a neurosis, but it is often difficult to believe, judging from the character of the stools.

NERVOUS SYSTEM.

Roussel considered the vertigo a very characteristic symptom, and described it as being much like a gastric vertigo. Diplopia and amblyopia are common, but were absent in all our cases. The pupils

react acutely to both light and accommodation, and the ophthalmoscopic examination has revealed nothing to us. The patients usually complain of a sensation of heat or cold in various parts of the body. We have attempted to investigate the tactile sense, the sense of heat, cold and pain, but our observations are inaccurate because of the mental state of our patients. The complaint of pain, especially in the shoulders and epigastrium, is quite common, and noted by us.

Convulsions are quite common and often close the scene. In one of our earlier cases this was so. Tetany is reported by some. We have found a coarse tremor present in a number of our cases. In one, just before death her whole body was in a constant tremor, but could not be accounted tetany.

The condition of the tendon reflexes is more variable. In many of our cases they remained normal. In a few they were absent, though there were no other symptoms of locomotor ataxia. In one case where the reflex had been absent there was a return before death in a rather exaggerated form. In one case it was much exaggerated, and ankle clonus was present. In one case it was present on one side and absent on the other. Usually, in the beginning of the disease it is normal or decreased, but later, when the lesion in the cord has extended, it is apt to be exaggerated. Station is usually good. The gait becomes unsteady, but not ataxic. A slight spasticity has been observed. Among the vaso-motor and trophic disturbances is usually included the erythema itself. In addition, we often find paleness of the skin, sensations of cold, "goose-flesh," and muscle atrophy in the shoulder, girdle muscles of the hand, thorax and lower leg. This should not be confounded with emaciation, which is often extreme. The alterations in the tongue and the thickening of the nails may be included under this head.

In Europe "misery and poverty" are counted the chief predisposing causes of pellagra. Just those conditions occurring among the peasantry in Europe are almost unknown with us. Certainly the richest and the poorest buy the same grade of corn-meal. The chief difference here, as we all know, is that the poorer class have less variety and often the food is poorly prepared. We are disposed to think that pellagra with us is not so much a respecter of persons, affecting the well-conditioned as well as the victims of previous disease and poor hygienic surroundings.

It has been shown, especially in Sandeith's Egyptian cases, that the parasitic disease seems to form a very definite predisposing cause. Especially has it been noted that *anchylostoma* is often present. One such case was noted by Harris in Georgia. Babes and Sion report the occurrence of malaria in eight of their twelve cases. We have had occasion to consider seriously this possible relationship. My first case, which was erroneously reported in the *Journal of the American*

Medical Association, had a latent malaria and the unusual condition of a mixed infection with tertian and quartan organisms. Much attention has been paid to the occurrence of alcoholism and syphilis with pellagra. This is unimportant except in so far as these conditions lower the resistance.

The course of pellagra is very variable. In Italy it is no uncommon thing for the outbreak to occur each succeeding spring for twenty years. Each year the patient becomes more wrinkled, more atrophic and more melancholy until, finally, he dies from some intercurrent disease, as broncho-pneumonia or of cachexia.

There recently came under our care a typical case of chronic pellagra which is worthy of note.

Mrs. W.; age 34 years; Jones County. Family history negative, save for malaria and typhoid. No history of miscarriages. In the spring of 1906 she was affected with gastro-intestinal symptoms, one month after the appearance of which the erythema appeared on her hand and the lower third of her forearms. In the spring of 1907 the same condition recurred. In May, 1908, the condition made its third appearance, was diagnosed pellagra and reported to me by my colleague, Dr. Thomas M. Green. Her condition was as follows:

A poorly nourished woman, much older in appearance than the age given. Symmetrically situated on her forehead were two patches of desquamating erythema. These patches are about equal to the size of two silver dollars. The same lesion surrounded both eyes. On the upper lid the lesion was more recent, with the presence of crusts and a weeping surface beneath. This lesion extended into the anterior nares. On the skin below the eyes the lesion was older and there is a slight brownish pigmentation. On the backs of both hands from the finger-nails to the middle of the forearms posteriorly is this same condition of the moist variety. The lesions were especially aggravated over the knuckles and tips of the nbia. The same condition was present on the anterior surface, save for the palms, where there was simple redness without exfoliation. Near the upper margins of the arm lesions was found considerable brownish pigmentation. On the back of the neck was a much older lesion, which had caused a tawny pigmentation. Posteriorly this lesion is about two inches in length, but as it extends anteriorly it becomes narrowed, almost meeting in front. The labia pudendi were affected with the moist lesion.

Heart and lungs were negative.

Spleen and liver negative to palpation and percussion.

Urine showed albumen and granular casts.

Blood showed a simple anemia of moderate degree.

No leucocytosis. Differential leucocyte counts showed no abnormal variations. Blood cultures were taken.

The patient's mental condition became rapidly worse; she refused nourishment, and a restraining sheet had to be used. In her mania she would rub off the crusts, from the arm lesions especially, and the picture that resulted was horrid, with the raw, bleeding surface and the bedclothing covered with blood and pus.

She died of exhaustion.

Our knowledge of chronic pellagra is limited, fully 75 to 80 per cent of our cases being acute. It seems remarkable that Lombroso should have had occasion to differentiate this acute or "typhoid" pellagra from typhoid fever. There is certainly no resemblance, except possibly in some of the late nervous symptoms of both diseases.

Our acute cases ran a course from a few weeks to a few months.

As an example of this is the following:

V. S. (colored); 12 years; Wilmington. Referred to us by Dr. W. J. Bellamy.

Family and previous medical histories negative as far as we could secure them, except that at this time she has a sister aged 6 years recovering from the first attack of pellagra. This child is in my care, and is strong and robust.

In February she had various vague digestive symptoms before she noticed at the outer canthi of the eyes a small red spot. This erythema increased in size rapidly, extending over the forehead. It next appeared beneath the angles of the jaw and extended around the neck, meeting behind. The gums were swollen and red and the whole mucous membrane of mouth inflamed. The eruption next appeared on the backs of the fingers and extended upward to the middle of the forearms. The face and both arms were covered, giving the appearance of a superficial burn. The contraction of the skin of the face has been described. From the beginning the bowels have been affected in the form of a persistent diarrhœa. The only gastric symptoms have been anorexia and nausea. With the aid of two doses of *santonin* during the past week she has expelled from the bowels forty-six round worms and vomited one. When first seen a week ago the feet and ankles were œdematous, but this has disappeared and the erythema has taken its place.

Knee jerks were absent, but have reappeared. Skin sensations normal. Pupillary reaction normal. She complains of cold sensations, weakness, and pain in right shoulder. She is now beginning to be quite delirious at times and falls out of the bed repeatedly.

June 13. The appearance of the face is distressing. The skin lesion seems really to have extended to the eyes. The cornea is dry and there is a marked conjunctivitis. Mucopurulent material flows from each eye. Both of the lids are so contracted that the eyes have not been covered for over a week; this condition is certainly largely the cause of the terrible state of the eyes.

Belmondo and a number of other observers state that typhoid pellagra never occurs primarily, that it is always the exaggeration of a recurrence in chronic cases. We have seen five cases die in the first attack. The disease must be more malignant than in southern Europe. It is difficult to explain why this should be, except that we know when a disease appears in a new country the death rate at first is always higher. We have examples of that in some of the yellow-fever outbreaks, and better still in the outbreak of measles in some of the Pacific islands, where the mortality was 90 per cent.

The diagnosis of pellagra, after it is well established, is quite easy and does not require yearly recurrences to establish it. In no disease is an early diagnosis more important than in this, as our only hope of effecting a cure is in removing the cause early in the disease.

Ergotism was the first thing thought of in our cases; it was excluded because of an absence of the characteristic numbness, tingling, vascular stasis, and gangrene of the fingers and toes.

I have had to watch for several days simple sunburn suspiciously in some cases because there is nothing more like it. The erythema of pellagra is described as resembling sunburn almost exactly. Usually, however, the diarrhoea and stomatitis precede.

Pellagra *sine* pellagra calls for our special attention. Right now we have a number of cases under this suspicion, but we must agree with the authority who rather questions the possibility of such a diagnosis. That such cases have occurred there can be no question, as the best authorities so state it.

The treatment of pellagra so far is not promising. Practically all acute cases die regardless of treatment. In chronic cases that are not far advanced the removal of all corn food, with tonic treatment, together with improved hygiene, often brings about recovery with or without mental deterioration, depending upon the stage of the disease when arrested. Babcock is using successfully atoxyl hypodermically in doses of one to one and a half grains every four to seven days. In much larger doses in the acute affliction it has failed in my hands. Babcock is also using Soamin (Burrroughs, Wellcome & Co.) in one grain doses three times a day. In Wilmington we have exhausted the pharmacopoeia without seeing any benefit derived by the sufferers.

DR. THOMAS: "Pellagrous Insanity" will be discussed by Dr. John McCampbell, Superintendent State Hospital for the Insane, Morganton, N. C.

SOME OBSERVATIONS OF PELLAGRA IN THIS COUNTRY, WITH SPECIAL REFERENCE TO PELLAGROUS INSANITY.

Pellagrous insanity, as the name implies, is so closely associated with and dependent upon the general systemic disease that its con-

sideration separate and apart would be difficult and hardly profitable, it being in reality only one of the late manifestations of the malady known as pellagra, which has been comprehensively defined by Van Harlingen as a "complex disease characterized by a class of symptoms:

"1. A squamous erythema confined to those portions of the skin which are exposed to the action of heat and light.

"2. A chronic inflammatory condition of the digestive passages, shown chiefly by obstinate diarrhœa.

"3. A more or less severe lesion of the nervous system, leading at times to mental alienations and paralysis.

"These various symptoms are at first insignificant and in a certain way periodic. They begin or recur in spring and diminish or disappear in winter. Later they become persistent, more and more marked, and finally terminate fatally."

Pellagra has been known to exist in Italy, Spain, and adjacent countries for more than a century and a half, and was scientifically investigated in Italy as far back as the year 1771; but until quite recently there has been very little said in this country on the subject. In fact, the existence of the disease has been denied by some of the most eminent medical writers of recent years, the subject being dismissed with brief mention and the statement that it is a disease confined to certain European countries. It is true that cases simulating pellagra were reported in the early sixties by Dr. Gray, of New York, and Dr. DeWolfe, of Nova Scotia; but the genuineness of these was questioned at the time and the disease either disappeared or was overlooked (the former, most likely) until attention was again called to it by the publication within the past year of the observations of Drs. Searcy, of Alabama; Babcock, of South Carolina; Wood, of this State, and possibly others, though some doubt apparently existed in the minds of some of these observers, as is evidenced by the fact that Dr. Babcock presents his able, and to my mind convincing paper, in the form of a query.

My own experience leads me to believe that we now have in this country, probably a recent development, a grave and usually fatal disease identical with the pellagra of southern Europe, and which may, under favorable conditions, gain the proportions of an epidemic. During the past four years I have, from time to time, encountered mental cases presenting certain definite and rather uniform manifestations and associated with a peculiar skin eruption, which I was unable to fit into any recognized classification; yet I realized that I was dealing with a distinct entity, and it was not until the earlier of the last referred to papers came into my hands that I was convinced that the disease in question was pellagra and the mental disturbance present constituted pellagrous insanity pure and simple. In support of this belief I wish to recount the chief etiologic and symptomatic features as observed in twelve of these cases, with spe-

cial reference to their mental aspect, since all of them were so far advanced in the disease as to necessitate their commitment to a hospital for the insane.

The theory generally, if not universally, accepted is that pellagra is in some way associated with the ingestion of Indian corn which is diseased, harvested immature, or in some way damaged and consequently containing a toxic substance, the exact nature of which has never yet been very clearly defined. Ballardini considers it a parasitic growth on mouldy and musty maize, while Lombroso suggests that it is due to a fatty oil and an extractive substance, the product of decomposition or bacterial action which are never present in sound corn. At any rate, the disease is more in the nature of a ptomaine poisoning than a direct bacterial infection. This would naturally be supposed, since most of the corn and corn preparations which are used as food have been cooked, and thereby subjected to a sterilizing temperature. It is of interest to note in this connection that I have recently had an opportunity to interview several native Italians of the peasant class, who had some knowledge of the disease, and they invariably assigned as the cause the eating of polenta three times a day; and they attached considerable importance to the fact that it was eaten three times a day. I am unable to determine the exact character of diet previously used by any of my cases, but there is good reason to suppose that corn was extensively eaten, and it will be conceded that this prime etiologic factor was present.

Locality within the State seems to have no particular influence, as the twelve cases were distributed impartially over the territory extending from Robeson to Madison counties. All of these cases were women, which fact is at variance with the common teaching, since the two sexes are supposed to be equally susceptible. The negative bearing of this circumstance is eliminated by the fact that at the time these observations were made my service was confined to the wards for women. In the epidemic occurring at Mount Vernon, Alabama, and reported by Dr. Searcy, eighty out of eighty-eight affected were women. The average age was thirty-eight years. Nine out of the twelve cases ranged from thirty-eight to forty-five, which is of no special significance, unless it be that the nervous instability consequent upon the approach of the climacteric in some way predisposes to the disease. Eight, or two-thirds of the twelve cases, showed first mental symptoms in either April, May, or June, and two others in July and August. Allowing for the slight delay in the occurrence of mental disturbance in these two cases, we have ten out of twelve occurring in conformity with the usual seasonal incidence of the disease, it being understood that most cases develop or recur in the spring or early summer months. There was a total absence of heredity in all but two cases, and in these it was remote—an insane uncle in one and an insane niece in another. Neither was there any instance of parental consanguinity.

Absence of these factors, which are important in the causation of most insanities, points to the exogenous character of the disease and renders it less likely that the ordinary insanities have been confounded with this series of cases. All, with two exceptions, were exceedingly poor, and most of them bore evidence of having undergone extreme privation. These conditions, no doubt, contributed to the development of the disease, both by the malnutrition consequent upon an insufficient diet and also by the fact that poverty of that degree usually necessitates the use of corn to a greater extent than is customary with people in better circumstances.

All the cases under consideration having, before coming under observation, reached a condition of extreme mental alienation, it naturally follows that we are dealing with latter stages of the disease, and data concerning the earlier symptoms are lacking. It appears from the histories given in the commitment papers that in a vast majority the mental symptoms were preceded by or associated with ill health, being in all probability nothing more than the lassitude, general debility and digestive disturbances common to the earlier stages of the disease. In fact, a rundown condition, debility, indigestion, general catarrhal condition of the intestinal tract and like troubles are specified in several cases.

The beginning of the psychic disturbance was usually marked by a period of anxiety and worry, undue importance was attached to trivial affairs and misfortunes were apprehended. Occasionally unusual religious interest was manifested. This was followed by a disturbance of perception and the development of hallucinations, usually auditory, though occasionally visual as well. Judgment was profoundly disturbed, giving rise to delusions, which were characteristic in that they were, with only one exception, depressive and painful in nature, though they lacked the self-accusatory quality of the usual delusions of simple melancholia, being rather of fear and suspicion: or more specifically, one thought that she was to be burnt up; another, that she was burning in torment and her child, recently dead, was also in hell. Still others thought that poison was put in their food or that they were to be hurt or injured in some way.

At this stage threats and attempts at suicide were rather frequent, and occasionally homicidal tendencies were present. Two cases showed very decided emotional instability. As the disease progressed memory became grossly defective and orientations as to time, place, and persons was imperfect. Incoherence of speech was common and was usually of the most desultory variety. Neither distractibility nor true flight of ideas were observed at any time. There were instances of mutism, the patient appearing dazed and failing to respond to questions and orders of the simplest kind, due probably to clouding of consciousness and a failure to comprehend.

Motor restlessness and insomnia were prominent, with a disposition, even when extreme weakness was present, to get out of bed, tangling and scattering the bedclothes about the room in the most aimless manner, and a kind of senseless resistance was made to efforts at examination. A total disregard for cleanliness soon appeared and all became extremely untidy in habits; this from mental hebetude and indifference rather than viciousness.

There was an early failure of appetite and frequently absolute refusal of food (often due to delusion), necessitating forced feeding with nasal tube.

These mental symptoms without remission steadily grew more and more pronounced until a condition of complete armentia ensued, and, coupled with the physical weakness present, was not unlike the so-called typhoid condition, and especially so when the delirium assumed a muttering character. Coexistent with the mental condition described there was invariably present an eczematous involvement of the skin, varying all the way from thickened, roughened and pigmented condition, with a tendency to fissure, to a typical exfoliative dermatitis. These skin changes were distinctive in that they were limited to exposed areas, the backs of the hands escaping in no instance, and in this location the milder cases strongly suggested sunburn. The involved surfaces were uniform and ended abruptly, usually at or just above the wrists. The line of demarcation was very distinct and correspondingly close to the limit of protection afforded by the sleeve or arm covering. The eruption occasionally appeared on the face, especially at the angles of the mouth, and once upon the forehead, but was not observed on the feet.

There was a tendency toward pigmentation and scaliness over the bone prominences, even where protected by the clothing, and especially so where counter pressure was exerted. This was most marked at the point of the elbows, the front of the knees, though at these places it was never as severe as when exposed to the action of the sun's rays.

The nervous disturbances consisted in exaggeration of the dual reflex, coarse intention tremors, ataxic and choreic movements of the extremities, especially the arms; and later this inco-ordination frequently involved speech, rendering it halting, slurring, and finally inarticulate.

The pupillary disturbance was slight, variable and inconsistent. As the end approached there was a general spastic condition of the muscles, with marked retraction of the neck and head, and a mere tap at almost any part of the body would excite a slight tetanic convulsive movement. Diarrhœa was usually present, characterized by obstinacy and an exceedingly offensive and putrescent odor of the dejecta.

All twelve cases terminated fatally. The course of the disease was rather rapid. The average duration after the beginning of the mental symptoms was three and one-half months. The average duration after admission to the hospital was forty-four days.

The foregoing mental symptom-complex, although somewhat contradictory, or at least inharmonious, might be to some extent associated with any of the toxic or exhaustion psychoses, since many of the symptoms mentioned are common to most of these conditions, without regard to the particular morbid influence in operation, and it was only by the somatic disturbance invariably present, chief among which were the skin lesions, that differentiation was possible.

I am aware that the number of cases studied is rather small and the records from which the histories are taken too incomplete to altogether justify a dogmatic statement, yet I believe that sufficient has been said to show the similarity of these cases to the descriptions of pellagra given in the classic writings on the subject.

And I would say, further, that this paper is not presented with a view to adding anything to the literature of the subject, but rather in the hope that I may, in some measure, at least, aid in directing the attention of the profession in general to a danger which possibly threatens us, since an early recognition is all-important, for it is only by prophylactic measures that we can hope to accomplish anything.

To show that this danger is not altogether imaginary, I will say that out of twenty deaths occurring among women in the State Hospital at Morganton during the past year, five, or 25 per cent, granting the correctness of diagnoses, were attributable to this disease—a number in excess of those assignable to any one cause, tuberculosis included.

DISCUSSION.

DR. W. P. WHITTINGTON, of Asheville, N. C.: Mr, President, I just want to add a few words in the report of a case that I saw a few years ago. A young man in good physical condition went from Asheville to Pittsburg, Pa., and while in Pittsburg, after being there two or three months, he contracted what I now know to be pellagra. He went under the treatment of different physicians there for about two months, expecting to get well, but he got worse all the time. He stopped at Greenville, in East Tennessee, about a month, where he was under the care of a physician he knew, expecting to improve, but got worse all the time. He then returned to Asheville, having had the disease about four months after

he left Asheville. He called to see me after he got back, and I knew there was something the matter with the intestinal tract. He seemed to have gastro-enteritis. He had that characteristic erythematous condition on the hands, extending up to the wrist, as far as the hand was exposed to the sun. He was very much emaciated and I thought he would die, but I put him on treatment for the symptoms, not knowing what the true cause of the condition was.

I want to mention the treatment, not knowing whether his coming back to North Carolina, where we have better corn, cured him, or he got well from some other cause. I gave him nitrate of silver, bismuth and opium. After that I put him on arsenic, and in three or four months the man appeared to be perfectly well, and is well to-day, five years, and has had no recurrence whatever.

Another case mentioned by Dr. McCampbell, of Morganton. It was a lady attacked with similar symptoms, but soon after she was attacked her mind became involved and she was sent to the asylum and there died.

I merely mention these cases. I did not know what they were at the time, but afterwards learned that they were possibly pellagra.

One of these, I think, originated in Pittsburg, Pa., and the other had not been out of Buncombe County, and was due, perhaps, to the infection received there.

DR. I. M. TAYLOR, Morganton, N. C.: I have seen in my practice, I believe, five cases which I can account for as pellagra. Of these, four have died; the other seems to have made a recovery. Three of these were men and two women. Three were intemperate people, and I accounted for their skin condition as the result of alcoholic abuse.

I confess that I have never made a diagnosis of the disease, and only since this discussion has opened in the journals and since reading the paper of Dr. Babcock have I recognized that I had been dealing with this condition.

I accounted for the general skin and nervous symptoms as malnutrition, and, in the case of two men and one woman, directly due to alcoholic abuse.

DR. STILES: I have seen two cases, one in South Carolina and one in Alabama, both recorded by the physicians who had them in charge. In one of these cases my examination was made and coincident thereto parasitic infection was found.

The question is raised, Is not pellagra of parasitic infection? If it is, it is something new to me.

The two cases that I saw, in Alabama and South Carolina, one is totally different from any symptom I ever saw.

In connection with the alleged cause it is interesting to note that it is particularly in Antwerp, Bremen and Copenhagen that complaints have been made regarding spoiled corn; and yet in that part of the world pellagra is unknown.

I mention this as an interesting fact—that spoiled corn does not seem to cause the disease.

DR. W. S. RANKIN: I desire to report a case that is interesting in the light of this recent and valuable work on pellagra.

The patient, a young man twenty-five years of age, a student at Wake Forest College, has suffered every spring and summer for the last three years with a peculiar skin lesion.

The lesion, symmetrical in distribution, consists of an abnormally smooth, hairless, slightly red and sensitive skin, about the size of a dollar, on the dorsal surface of the hands just above the metacarpo-phalangeal articulation.

Knowing Dr. Wood's interest in the relation of malaria to Raynaud's disease, and believing this case to bear some relation to some of the varieties of Raynaud's disease, I referred the case to him.

At his suggestion the patient began a course of Fowler's solution, but was unable to note much change in his hands.

In April of this year the patient consulted my colleague, Dr. Gaines, whose attention had been attracted by recent liter-

ature to the relation of certain skin lesions to intestinal intoxication as evidenced by well-marked indicanuria, and the relief of the skin lesions by medication addressed to his intestinal trouble.

On examining the urine a well-marked indicanuria was evident.

The patient was given sodium phosphate enough to produce two motions a day, with salol 5 grs. every four hours. Within two weeks the skin lesions had almost disappeared.

Since Dr. Stiles has mentioned it, I am almost sure that two years ago I found this man with a very light uncinariasis.

DR. DALTON: I would like to make an announcement. Over at Nissen Park we have a supper prepared for the Society which will be ready at 7:30, and as soon as you can adjourn you take the cars going south at once.

DR. THOMAS: Gentlemen, it is not necessary for me to repeat such a pleasant invitation as that. I am sure it will appeal to you.

If there is no more business before the conjoint session we will now adjourn.

The session is now adjourned.

THE NORTH CAROLINA ASSOCIATION FOR THE PREVENTION
OF TUBERCULOSIS.

MINUTES OF THE SECOND ANNUAL MEETING,
MOREHEAD CITY, JUNE 12, 1907.

The second annual meeting of the North Carolina Association for the Prevention of Tuberculosis was held at Morehead City on June 12, 1907. President M. L. Stevens was in the chair. There were present about twenty members. The minutes of the last meeting were read and approved.

The President read a report of the work accomplished during the past year. Upon motion, the report was accepted.

Dr. Templeton moved that the present officers of the Association be re-elected for the coming year. The motion was carried.

Dr. Benjamin K. Hays was elected delegate to the National and to the International Association, to be held in Washington City next year; Dr. I. M. Taylor, alternate.

A committee, composed of Drs. J. Howell Way, C. M. Poole and J. R. Williams, was appointed to solicit membership.

A time for holding the meetings of the Association was discussed. Dr. Way suggested that the Secretary arrange with the Secretary of the State Medical Society for an hour (or more) of the time of that body. Upon motion, this was carried.

There being no further business, the Association adjourned.

BENJAMIN K. HAYS,
Secretary.

MINUTES OF THE THIRD ANNUAL MEETING,
WINSTON-SALEM, JUNE 18, 1908.

At 12 o'clock Dr. C. A. Julian, Vice President, called the body to order in the lobby of the Hotel Zinzendorf, Winston-Salem, N. C.

Dr. W. L. Dunn, of Asheville, N. C., was elected President; Dr. John Roy Williams, of Greensboro, N. C., was elected Vice President; Dr. C. A. Julian, of Thomasville, N. C., was elected Secretary and Treasurer.

The following members of the Association were present at the meeting:

Drs. L. B. Morse, John L. Williams, W. C. Bronson, H. C. Weaver, W. L. Dunn, H. T. Bahnson, J. Howell Way, C. A. Julian, Richard H. Lewis, William M. Jones, Isaac M. Taylor, J. F. Highsmith, Hon. Clement Manly, Drs. William Bolton, P. E. McFayden, E. M. Summerell, D. A. Dees, A. W. Knox, J. B. Smith, J. A. Turner, J. R. Reitzel, Charles R. Wharton, E. C. Laird, W. P. Whittington, J. C. Grady, H. H. Briggs, W. S. Rankin, A. B. Croom, J. L. Hanes, J. P. Turner, F. O. Rogers, C. F. Harper, H. H. Dodson, J. Allison Hodges, L. B. McBrayer, Philip Morris, A. L. Flanders, Francis Duffy, R. G. Buchner, J. W. Long, A. A. Kent, W. P. Beall, J. T. Burrus, G. E. Jordan, C. A. Andrews, W. P. Reeves, J. M. Reese, H. A. Barnes and D. A. Stanton.

The Association was organized May 30, 1906, by the committee appointed by the President of the North Carolina Society, under resolution offered at the 1905 session. The purpose of the Association, as stated in article 2 of the Constitution of the Association, is the prevention of tuberculosis:

(a) By the study of the disease in all of its forms and relations.

(b) By the dissemination of knowledge concerning its cause, prevention and treatment, and by supplementing the work of the State Board of Health in this cause.

(c) By such other means as may from time to time be deemed advisable.

This Association is bending all energies to stimulate a wide interest in this most important branch of preventive medicine.

A number of gentlemen spoke of the work that the Association should undertake, and plans were advanced for making the Association one of the most effective working bodies in the State.

On motion of Dr. Richard H. Lewis, of Raleigh, all members present were elected delegates to the International Congress on Tuberculosis at the meeting in Washington, D. C., September 21st to October 12th.

On motion of Dr. W. L. Dunn, Drs. Charles Minor, S. W. Battle, M. L. Stevens, Paul Ringer, of Asheville; Drs. Thomas A. Mann, of Durham; William R. Kirk, Hendersonville, and D. A. Dees, Bayboro, were elected delegates to the International Congress on Tuberculosis.

We have passed the stage of experiment, and each meeting in the future should show a respectable array of measures successfully carried out and the broadening of our sphere of influence for good.

The Association adjourned to meet upon call of the officers.

CHARLES A. JULIAN, M. D.,
Secretary.

STATE LABORATORY OF HYGIENE.

REPORTS OF EXAMINATIONS, MADE IN THE STATE LABORATORY OF HYGIENE FROM MARCH 1, 1908, TO DECEMBER 31, 1908.*

	<i>Positive.</i>	<i>Negative.</i>
116 Examinations of feces.		
Hookworm	62	32
Oxyuris vermicularis	1	...
Ascaris lumbricoides	2	...
Amœba coli	1	1
Fly larvæ	3	...
Tœnia saginata	1	...
Tubercle bacilli	2	4
Blood	4	2
Cancer cells	1
164 Examinations of sputum for tubercle bacilli.	63	101
222 Examinations for diphtheria.....	152	70
28 Examinations for malaria.....	3	25
91 Examinations for Widal reaction.....	35	56
6 Examinations for gonococci.....	3	3
33 Examinations for rabies.....	20	13
2 Bacterial examinations of pus.		
2 Differential leucocyte counts.		
80 Specimens of urine with a variety of bacterial and chemical determinations.		
40 Examinations of pathological tissues, as follows:		
Carcinoma	8	
Chronic inflammation	11	
Benign hypertrophies	6	
Sarcoma	4	
Chondroma	1	
Colloid goitre	2	
Tuberculosis	6	
Trichinosis	1	
Pyæmia	1	
906 Examinations of water.		

1,690

* No report was made by the former Director for the period between May 1, 1907, and March, 1908, when the present Director took charge, and his report from January 1, 1907, to May, 1907, was included in a report for two years preceding the latter date, and could not be separated. Hence the partial report for this biennial period.

The Pasteur treatment was begun in July, and from that time to January 1st forty-two persons were given treatment. In thirty-three of these cases a positive diagnosis of rabies was made in the attacking animal. In the remaining nine the dogs' heads were not obtained, and a probable diagnosis was made from the clinical symptoms.

In addition to these, a number of persons sought the advice of the Laboratory regarding dog bites, and treatment was not advised.

C. A. SHORE, M. D.,

Director.

INSPECTION OF STATE INSTITUTIONS.

THE CAPITOL AND THE BUILDINGS OF THE SUPREME COURT AND OF THE DEPARTMENT OF AGRICULTURE.

TO THE COUNCIL OF STATE.

Raleigh, N. C.

GENTLEMEN:—Commissioned by the President of the State Board of Health, we, on October 7, 1908, made a sanitary inspection of the public buildings and institutions under your care, to wit: The Capitol Building, the building of the Agricultural Department, and the Supreme Court Building.

From a sanitary standpoint we are pleased to report that we found all keeping pace with up-to-date sanitation as to water supply, sewerage, and ventilation. We were much pleased to note the elegant water-closet, etc., with its tile floor and marble walls, which has recently been installed on the first floor of the Capitol. The old ones are well kept for a building of this kind.

We would reiterate a former suggestion: That to contribute to the ventilation of the Senate Chamber and House of Representatives we think it important to keep open fires in all the fireplaces of the chambers.

Respectfully submitted,

THOMAS E. ANDERSON, M. D.,

EDWARD C. REGISTER, M. D.,

Committee.

STATE EDUCATIONAL INSTITUTIONS.

THE UNIVERSITY.

THE BOARD OF TRUSTEES,

University of North Carolina.

GENTLEMEN:—The undersigned, a committee of the State Board of Health, appointed for the purpose, made a sanitary inspection of the University on May 26th, and beg leave to report:

The plumbing in the Carr Building and in the Old East Building we found in bad condition, and would recommend that all closets in the former above the first floor be taken out and that the supply pipe to the sink in the latter, which was leaking at the time of our visit, be made good—as we have no doubt was promptly done. In making these criticisms we realize the practical difficulty in so small a village of obtaining the services of a satisfactory plumber.

With the exception of the above, we found nothing unsanitary.

Owing to the rapid growth of the University, the supply of heat, light, and water is inadequate. It is unnecessary to say that a deficiency in these three elements is inimical to health and should be made good as soon as possible. In the matter of the water supply, in addition to increasing the pumping capacity and the size of the stand-pipe, ample filters of the best character should be provided.

Very respectfully,

GEORGE G. THOMAS, M. D.,

RICHARD H. LEWIS, M. D.,

Committee.

NORMAL AND INDUSTRIAL COLLEGE.

THE BOARD OF DIRECTORS,

*State Normal and Industrial College,
Greensboro, N. C.*

GENTLEMEN:—We, the undersigned, a committee appointed by the State Board of Health, visited and inspected the State Normal and Industrial College at Greensboro, N. C., on the 10th day of November, 1908, and we herewith beg to submit the following report:

In the kindest and most courteous manner we were shown over the buildings and grounds, which we found to be in a most satisfactory condition from a sanitary standpoint.

The water supply used is from the city water supply, the drinking-water used being boiled before use, and thoroughly sterilized (the Forbes apparatus, with some recent additions, being used), thereby insuring a perfectly sterilized and pure water, free from all infectious bacteria.

The sewerage and plumbing have been recently inspected by expert plumbers and we find them in first-class condition.

Ventilation and cleanliness throughout testify as to the skill and thoughtfulness displayed from a sanitary standpoint.

We find very little sickness throughout the institution; the diet furnished being much more wholesome and abundant than it was two years ago—in fact, as good as could be served to this number of students.

The college has a fine herd of well selected, hearty cows, and much care is given to the milk used, though there are some improvements that could be made in the dairy equipments, with benefit.

There is, however, one condition that we call your attention to, and through you to the next Legislature, viz., the necessity of more dormitory rooms. The grand purpose for which this institution was built and intended is being curtailed by the want of dormitory room, as we are informed that over a hundred young women who applied for admission had to be turned away on this account. We do there-

fore recommend to you, and through you to the next Legislature, that this urgent need be provided for, and dormitory room for at least two hundred more students be provided for.

The new science building, just being completed, is unusually well equipped in every respect, especially from a sanitary standpoint.

Very respectfully submitted,

JAMES A. BURROUGHS, M. D.,

W. O. SPENCER, M. D.,

Committee.

THE COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

THE BOARD OF TRUSTEES.

N. C. College of Agriculture and Mechanic Arts,

Raleigh, N. C.

GENTLEMEN:—Pursuant to appointment by the President of the State Board of Health as a committee to inspect the sanitary condition of the College of Agriculture and Mechanic Arts, we discharged that trust on October 7, 1908, and are pleased to report that from a sanitary viewpoint we found nothing out of harmony with up-to-date requirements.

We were most courteously shown over the ample and beautiful grounds and buildings by the President, Dr. D. H. Hill. In location of buildings, in diversification of work, as well as in everything looking to the health, physical and mental training of the student body, this college is the pride and hope of our State.

City water is used now almost entirely, having been recently installed. A very deep well, whose water is carefully inspected, is reserved for any emergency that may arise from a deficient city water supply.

This property is being beautified every year and will become one of the most attractive in the State.

Very respectfully,

THOMAS E. ANDERSON, M. D.,

EDWARD C. REGISTER, M. D.,

Committee.

AGRICULTURAL AND MECHANICAL COLLEGE FOR THE COLORED RACE.

THE BOARD OF DIRECTORS.

A. and M. College for the Colored Race,

Greensboro, N. C.

GENTLEMEN:—The undersigned, a committee appointed by the State Board of Health, visited and inspected the above-named institution on the 11th day of November, 1908, and we beg to submit the following report:

This institution is a credit to the State; its management is kept well in hand by its efficient President, Dr. Dudley, who is thoroughly enthused with his work, and entirely conversant with the demands of his race, in a proper training for them along useful lines of industrial pursuits, etc.

The grounds are well kept; the water supply is from the city water system, and we suggest that a system of sterilizing this water for drinking purposes would be a great safeguard against bacterial invasion, should the city water, in any way, become polluted at any time.

This institution has no sewerage, surface privies being in use, which, however, are kept as sanitary as conditions will permit. We suggest to the President that a preliminary survey be made and the cost of connecting this institution with sewerage be ascertained and submitted to you, and through you to the next Legislature; and we hereby recommend that the premises be connected with city sewerage, with an up-to-date sewerage system, connecting each apartment with the said sewerage.

This institution has a nice herd of cows, and much care is given to the milk supply of the students. Altogether, this institution is calculated to do much good for the colored race, and they should be justly proud of it. Very respectfully submitted,

JAMES A. BURROUGHS, M. D.,

W. O. SPENCER, M. D.,

Committee.

SCHOOLS FOR THE DEAF AND BLIND, AT RALEIGH.

TO THE BOARD OF DIRECTORS,

Schools for the Deaf and Blind,

Raleigh, N. C.

GENTLEMEN:—Having been designated a committee by the President of the State Board of Health to make a sanitary inspection of the two schools under your charge, on the 7th day of October, 1908, we visited your schools, and beg to say that after thoroughly going over these buildings we were favorably impressed by the excellent manner in the which they are kept, from a sanitary standpoint. The water-closets, the bathrooms, the floors, the bedding all show that close surveillance is exerted here. We found sick rooms provided and most modern fire escapes in both institutions. These schools both use the city water and have sanitary plumbing and sewerage.

In the dormitories of the Colored School there is no provision for heating, which we think must impose much discomfort on the children in extremely cold weather, many of whom are, in addition to

their defects, delicate. We would recommend that radiators be placed in these rooms at convenient distances, to supply proper heat and remedy this want. Very respectfully submitted,

THOMAS E. ANDERSON, M. D.,

EDWARD C. REGISTER, M. D.,

Committee.

SCHOOL FOR THE DEAF AND DUMB, AT MORGANTON.

BOARD OF DIRECTORS,

School for the Deaf and Dumb,

Morganton, N. C.

GENTLEMEN:—The undersigned, a committee of the State Board of Health appointed to make the regular sanitary inspection of the State institutions at Morganton, made such an inspection of your school on the 21st inst., and beg leave to report:

We made a careful and thorough inspection and are pleased to say that we found the school buildings in an excellent condition from a sanitary point of view. The rooms and halls were very clean and neat and the plumbing in good condition. A serious mistake was made in the original construction of the dormitory building in providing inside toilet-rooms. As arranged, they get very little daylight of any kind and never a ray of sunlight. This is contrary to the rules of sound sanitation, and, if it can be done, it should be remedied.

We calculated the air space allowed each pupil, and while not equal to the ideal requirement, the steam heating by the direct-indirect method, with the arrangement of the ventilating flues, makes the conditions practically satisfactory. But the limit has been reached, and before the number of inmates can be safely increased, additional room must be provided.

As deafness in a very large majority of cases results from diseases of the nose and throat, as for example, enlarged tonsils, adenoids and deformities of the nasal passages, undue prevalence of such troubles is to be expected in a school for the deaf. They therefore require, to a greater extent than ordinary children, special treatment, and we recommend some arrangement by which, at proper intervals, the services of a competent aurist, who can also look after their eyes, can be secured.

In conclusion, we can say with sincerity that in our judgment the State is to be congratulated on the admirable condition of this school.

Respectfully yours,

GEORGE G. THOMAS, M. D.,

RICHARD H. LEWIS, M. D.,

Committee.

ORPHAN ASYLUMS.

OXFORD ORPHAN ASYLUM.

BOARD OF DIRECTORS.

Oxford Orphan Asylum, Oxford, N. C.

GENTLEMEN :—Having been appointed by the President of the State Board of Health to make the usual sanitary inspection of your institution, I beg leave to report :

I made the inspection on October 22, 1908. My visit was unannounced and wholly unexpected on the part of any of the officials or attendants, and I am fully satisfied that I found conditions, sanitarily speaking, as ordinarily existing at both institutions visited.

I spent several hours in inspecting numerous rooms in every department of the various buildings of the Oxford Orphan Asylum for white children, and it affords me pleasure to report that its sanitary management is excellent and to be most highly commended. At the time of my visit I found 23 mild cases of scarlatina, all of which were isolated in the little hospital apart from the other buildings of the asylum. The type of the disease was very mild, and apparently the epidemic was under complete control, so that I did not apprehend danger of its further spreading. In this connection I cannot forbear commending the excellent work done by Dr. T. L. Booth, the skillful physician to the Masonic Asylum, and the efficient matron in segregating promptly each of the children who showed the slightest symptoms of the disease. To their prompt action in this respect is undoubtedly due the fact that the institution is spared a more general epidemic of scarlatina.

Everywhere throughout the numerous buildings inspected I was gratified to note the great attention paid to ventilation; in not a single room, or in one of the several basements visited, did I find the presence of foul or stagnant air.

Two suggestions for improvements are submitted :

1. The windows of the hospital building should be more carefully screened. Most of the windows of the major portion of the building are at present screened, but in the rear parts I observed several un-screened windows.

2. Funds should be forthcoming to provide good cement or other substantial pavements or walks connecting the various buildings of the institution. At present it is necessary for more than 300 little children to frequently pass from the various dormitories to other buildings in attending school, chapel exercises, going to and from the dining and mess halls, etc., and as the walks as at present constructed are simply the natural clay graded to a rise in the center of the walk, it is inevitable that on rainy days the walks become quite

muddy. This necessitates either extra shoes or overshoes or the inevitable wet feet with resultant catarrhal difficulties among children.

I wish, in conclusion, to put on record my appreciation of the apparent effort manifest in the management to secure the greatest possible results from the financial means at hand.

Respectfully submitted,

J. HOWELL WAY, M. D.,

Committee.

ASYLUM FOR COLORED ORPHANS.

BOARD OF DIRECTORS,

Asylum for Colored Orphans, Oxford, N. C.

GENTLEMEN:—The Orphan Asylum for Colored Children was visited and carefully inspected. I was most favorably impressed with the very great cleanliness manifested in the various rooms, clothing and bedding used by the children, and I have but kindly words of encouragement and commendation of the apparent effort to make a meager support care for a considerable number of orphaned children.

One suggestion I desire to offer relative to the water supply: At present it is derived from a shallow surface well. It is to be hoped funds will be available at an early date to afford a deep-well supply. The premises were neatly kept and clean, and I went away from the place wishing that its general method of keeping could be made a visible object-lesson to the other members of the colored race in impressing them with proper sanitary ideas.

In conclusion, I desire to again express my appreciation of the apparent effort manifest in the management to yield the greatest possible results with the financial income at hand.

Respectfully submitted,

J. HOWELL WAY, M. D.,

Committee.

HOSPITALS FOR THE INSANE.

HOSPITAL AT RALEIGH.

THE BOARD OF DIRECTORS,

State Hospital for the Insane, Raleigh, N. C.

GENTLEMEN:—Appointed by the State Board of Health as a committee to inspect the sanitary condition of your institution, we, the undersigned, performed that duty October 7, 1908.

It gives us pleasure to state that we were accorded marked courtesy by the polite and able faculty of that institution and shown the entire plant *in toto*—the buildings, barns, laundry, kitchen, cold storage and all.

From a sanitary standpoint we saw nothing to condemn, but much to commend. We noted with pleasure the nearness to completion of the extensive annex to the old building. It is almost ready for the beds to be placed in the rooms. This will at once relieve the congested state of the old building.

The milk supply here is ample, from a fine herd of cattle, and great care is given to its purity.

This hospital is fortunate in the recent regulation to exclude tuberculous patients from its wards and should exhibit a higher ratio of cures. We hear also, with pleasure, of the purchase of eleven hundred acres of land, lying adjacent to this property, which will permit the carrying out of the more advanced methods for treating the insane.

Very respectfully submitted,

THOMAS E. ANDERSON, M. D.,

EDWARD C. REGISTER, M. D.,

Committee.

STATE HOSPITAL, MORGANTON.

THE BOARD OF DIRECTORS,

State Hospital, Morganton, N. C.

GENTLEMEN:—The undersigned, representing the State Board of Health, at the request of your Superintendent, visited the Hospital on July 15th for the purpose of advising as to the location of the special quarters proposed for the tuberculous patients. In consultation with the medical staff of the institution, we reached the following conclusions:

1. That provision should be made for three classes of tuberculous insane: (*a*) For the bedridden, (*b*) for the ambulant quiet cases, (*c*) for the ambulant disturbed cases. This would necessitate at least three wards for each sex.

After a careful consideration of the matter—the cost of maintenance being had in view as well as the safety of the patients free from the disease against infection—we are of the opinion that the best arrangement would be as follows: For the men, an annex, connected by a corridor, should be made to the proposed new men's building. This would insure all necessary isolation of the infected and at the same time would be more economical in administration than a detached building, located at some little distance from the others. For the women we would advise a similar annex to wards 9 and 10.

As we understand it to be the settled intention of your honorable Board to provide the safeguard against infection by tuberculosis demanded not only by humanity, but also by a public opinion that has in the last few years become enlightened on this most important subject, we feel that it would be a work of supererogation to argue its necessity. We beg, however, respectfully to suggest that when the

plads are drawn room enough shall be provided not only for the number of consumptives now in the hospital, but for the total number reasonably to be anticipated in the large population that in a few years will occupy the institution.

In conclusion we wish to express our gratification at your decision to secure protection to the uninfected afflicted ones against this painful, lingering and, in such subjects, hopeless disease.

GEORGE G. THOMAS, M. D.,

RICHARD H. LEWIS, M. D.,

Committee.

HOSPITAL AT MORGANTON.

BOARD OF DIRECTORS.

State Hospital, Morganton, N. C.

GENTLEMEN:—In compliance with the law, the undersigned, representing the State Board of Health, made, on December 29th and 30th, a sanitary inspection of the institution under your care, and beg leave to report:

The general sanitary condition we found excellent. The hospital was very clean and the plumbing in good shape and working order. We would, however, call your attention to the inadequacy of the kitchen, which, originally designed for 425 patients, can hardly be expected to provide comfortably and satisfactorily for more than one thousand at present, and for several hundred more in the near future, we hope. Fortunately, the conditions are such that the necessary enlargement can be made without changing the building in any way and at moderate expense, by simply taking out the bake-ovens now in use and erecting new ones at some convenient place outside. We respectfully advise that this be done at an early day.

The colony we found in good condition, and cordially commend the system. We are pleased to know that the Hospital Commission has arranged for the establishment of another.

Having in more than one previous report urged special quarters for the tuberculosis patients, we were much gratified to find that this provision has been made for the women, and that the money was in hand for the erection of a similar ward for the men. We do not express ourselves too strongly when we say we were delighted with the pavilion. The general arrangement is admirable and the ideal for consumptives—unlimited fresh air and sunshine—is fully met. The white color adds materially to the brightness and cheerfulness and completes a most pleasing general effect. We are unable to suggest an improvement on it and, therefore, cordially endorse your intention of making the second pavilion a replica of the first—similarly connected by corridor to the south side of I Ward, we would advise.

Having made these regular inspections for many years, we feel

that it would not be amiss for us to express to you our opinion that you showed great wisdom in selecting, as successor of the deeply lamented Dr. Murphy, one who, with excellent endowments of his own, as assistant physician enjoyed unusual advantages in preparing for this work in his long association with, and training by, that great executive and administrator. Truly, "his works do follow him."

Very respectfully,

GEORGE G. THOMAS, M. D.,

RICHARD H. LEWIS, M. D.,

Committee.

STATE HOSPITAL FOR THE COLORED INSANE, GOLDSBORO.

BOARD OF DIRECTORS,

State Hospital, Goldsboro, N. C.

GENTLEMEN:—In accordance with my appointment by the President of the Board of Health as a committee of one to inspect the State Hospital for the Colored Insane at Goldsboro, I beg leave to report as follows:

I went to Goldsboro on the 22d of December and spent the morning of the 23d at the State Hospital for the Colored Insane. Dr. Faison was clever enough to take me through the institution and showed me in detail everything I desired to inspect.

I found the institution in the very best sanitary condition. I have only to suggest the need of a new floor in the old building, which was put there twenty-eight years ago, and is now rough and hard to clean and the inmates frequently get splinters in their feet from walking over same.

The lavatories in certain portions of the building were made of iron and have been in use a long while, hence they are very rusty and hard to clean, and I would suggest they be replaced by porcelain.

There are 665 inmates now confined in this institution, 38 tuberculars and 44 epileptics. Of course they should be isolated, and they are, so far as can be in the same building; but I note the hospital committee has now in the course of construction four buildings for the male and female tuberculous and epileptics which will accommodate twenty patients each. They should have been at least large enough to accommodate forty each.

The water and sewerage seems to be all that could be desired, as Dr. Faison tells me there has not been a case of continued fever in the institution for years.

So far as I can see and judge, it is clean, neat and kept in every particular in as near a perfect sanitary condition as can be. In going through the building there is not even the slightest odor, and we all know the negro when insane is filthy and dirty, and how he can

keep the insane in such a cleanly and wholesome condition is really hard to understand, and can only be done by constant watching and working.

I commend Dr. Faison and his able staff to the North Carolina Board of Health as an example for every public institution.

I am, with much respect,

D. T. TAYLOR, M. D.,

Committee.

THE STATE'S PRISONS.

THE PENITENTIARY.

BOARD OF DIRECTORS.

State's Prison, Raleigh, N. C.

GENTLEMEN:—The undersigned, a committee appointed by the State Board of Health to make the regular biennial sanitary inspection of your institution, in the discharge of that duty visited the buildings and grounds of the State's Prison on October 7, 1908.

After as thorough an inspection as we thought demanded of both the prison department and the department for the criminal insane we feel warranted in saying that the sanitary condition of the entire institution is as good as can be made in any institution of this kind. An ideal state would include water-closets for each cell, but, of course, this is out of the question. In the absence of these, the cells are kept clean, free from smell and the bedding in good condition.

The water supply, now from a large and very deep well, should be regularly inspected and should at no distant day be supplanted by water from the city water system, which will respond to more complete sanitation.

Very respectfully,

THOMAS E. ANDERSON, M. D.,

EDWARD C. REGISTER, M. D.,

Committee.

CONVICT CAMP AT ELKIN.

BOARD OF DIRECTORS.

State's Prison, Raleigh, N. C.

GENTLEMEN:—The undersigned, appointed by the State Board of Health to make the regular sanitary inspection of the camp at Elkin, N. C., beg to submit the following report:

That duty was performed this day, November 24, 1908, and am pleased to state that the camp is well located on a branch in the hills, all the sewage being deposited in and carried off in said branch of run-

ning water; a very shallow well furnishes drinking-water; no sources of pollution visible; there has been but little sickness in this camp.

There is one boy, Joseph Alexander, colored, from Mecklenburg County, long term prisoner, sentenced for twenty (20) years (has served about three years), who is suspected of being infected with tuberculosis; has been off work about two weeks. I requested that a sample of sputum be sent to the State Biological Laboratory. Should that examination reveal the fact that he has tuberculosis, then he should be taken out of that camp and placed with the like cases at the prison; otherwise the camp is in as good sanitary condition as circumstances will permit.

Very respectfully submitted,

W. O. SPENCER, M. D.,

Committee.

STATE FARM.

BOARD OF DIRECTORS.

State's Prison, Raleigh, N. C.

GENTLEMEN:—As a committee of one appointed by the State Board of Health to inspect the State Farm in Halifax County, I beg to submit herewith the following report:

I visited the State Farm and with the two supervisors, Capt. C. J. Rhem, Capt. C. N. Christian, and the State Physician, Dr. F. M. Register, I inspected the premises in detail, Camps Nos. 1 and 2. There are at both places about 305 convicts. They seem to be cared for nicely, and made comfortable as possible.

The hygienic surroundings were as good as could be under the circumstances. The sewerage and water supply and means of bathing and washing are not what they should be. I would suggest a system of waterworks and sewerage and better facilities for having the prisoners bathe.

I would also, from a health standpoint, suggest that screens be put in the windows and doors in the buildings where the prisoners sleep and eat, as Dr. Register tells me that the old ones are worn out, and that he found that when the buildings were well screened there were fewer cases of fever. I would suggest that the old wooden floors in the buildings now in use be replaced by concrete floors, as they can be kept clean and in a more healthful condition. I would also suggest that iron beds should replace the old wooden ones in the hospital camp: they are certainly very much needed.

I find eight patients detained in the hospital camp suffering from slight ailments; but upon the whole I believe the officials at the State Farm are careful and painstaking in the discharge of their duties towards the convicts, and keep them in as near a sanitary condition as can be with their present environment.

Very truly yours,

D. T. TAYLOR, M. D.,

Committee.

CONVICT CAMP IN BEAUFORT COUNTY.

BOARD OF DIRECTORS,

State's Prison, Raleigh, N. C.

GENTLEMEN :—AS a committee of one appointed by the North Carolina Board of Health to inspect the State convict camp in the lower part of Beaufort County, I herewith submit my report, as follows :

On my visit to the camp Mr. W. O. Cox, the steward in charge, very kindly showed me in detail the surroundings and everything I wished to inspect.

The camps are located between Belhaven and Leechville. There are 65 convicts, none of them sick. They look well and healthy, showing that they are well cared for, and made to obey, as near as possible, all sanitary laws that are necessary for their health and welfare in the way of regular hours, baths, food and so on.

That portion of the county is naturally flat and low, hence the camps are not in a desirable location; but the supervisors have arranged a number of small ditches or drains around the different camps, thereby making the sanitation very much better.

Their water is obtained from driven wells, a sufficient distance from the camps to insure against any pollution, and the surroundings generally show evidence of intelligence and careful management.

There had been an average of about 75 prisoners for the last 17 months confined to this camp, working through Hyde and the lower part of Beaufort counties, and only two deaths have occurred during that time, and both were sudden, probably induced from heart disease.

There has been no continued fever or contagious or infectious diseases of any kind among them.

The old canvas from which the tents are made is about worn out, but the supervisor told me they would have new canvas and pitch new tents immediately, which is very much needed, and will protect them from the hard winter.

I think the convicts have all the care and attention necessary for their health, and I have no suggestions; everything seems in model order as far as the environment and circumstances will permit.

Respectfully yours,

D. T. TAYLOR, M. D.,
Committee.

WATER SUPPLIES.

CLEANING STANDPIPE AT OXFORD.

Dr. C. A. SHORE,

Raleigh, N. C.

DEAR SIR:—In supplying small towns with water by means of pumping periodically into tanks or standpipes of approximately 100,000 gallons capacity we understand that at times there is a slight accumulation on the upper surface of the water in the standpipe of dust and small particles, and while these can be excluded by properly covering the top of the standpipe, it occurs to us that by an extra precaution it would be well to flush off this upper surface of water.

This could be done in either of the two ways, as follows: First, by emptying all the water out of the standpipe, and, secondly, by filling the standpipe to overflowing so that the upper surface of water is thrown away and flushed over the standpipe.

We would like to know which of the two methods you would approve of. We are making this inquiry in the interest of the health of the communities which we serve with water and would greatly appreciate your opinion in the matter.

Yours very truly,

THE OXFORD WATER AND ELECTRIC COMPANY,

By R. F. CARBUTT.

Referred for reply to Col. J. L. Ludlow, Engineer of the Board.

WINSTON-SALEM, N. C., August 1, 1908.

MR. R. F. CARBUTT,

Care Oxford Water and Electric Company,

Oxford, N. C.

DEAR SIR:—Referring to your letter to Dr. C. A. Shore, Raleigh, N. C., and regarding which you talked with me over the long-distance phone yesterday, beg to advise as follows:

As I understand your inquiry, it is predicated on the assumption that dust and small particles of matter are liable to accumulate on the surface of the water in uncovered standpipes and tanks, rendering it desirable or necessary that this water be removed at periodic and short intervals of time; and this condition and the necessity being admitted, the desired advice concerns the preferable method of accomplishing this as between the plan of skimming it off the top or by drawing it off through the bottom.

Without expressing any agreement with the hypothesis upon which the inquiry is predicated, I would state that if it could be admitted, then by far the preferable plan of remedying the condition is that of pumping into the standpipe and tank at the bottom and overflowing at the top, either through the overflow pipe or over the top edge, should the conditions surrounding it be such that the foundation would not be injured by discharging such a large quantity of water around it. This is very much to be preferred over the plan of emptying the standpipe and passing its contents into the pipe distribution system, even though the pipe distribution system itself may be emptied at the same time.

Unless the substances that may thus become accumulated in the standpipe or tank are such as to constitute offensive impurities, there would be no necessity for their removal, but if they do constitute offensive impurities, then they should never be deliberately introduced into the pipe distribution system, where it might or might not be impossible to clean out and get rid of them. It is very difficult to clean a pipe distribution system should it ever become seriously fouled.

I would add that it appears to me that the source of this inquiry is based entirely on a wrong conception of the conditions that are liable to obtain with standpipes and tanks that have no cover over them. What material might lodge and float on the surface of the water will be of little or practically no importance so far as relates to hygienic conditions.

The greater portion of the small amount of substances that could reach the top of the standpipe or tank, and that should be considered objectionable, would be heavier than the water and settle to the bottom. In the case of tanks with the outlet connection at the very bottom, all such material will be gradually discharged into the distribution mains. With standpipes having outlets a short distance above the bottom, which is quite a common practice, it may be quite desirable that the matter that may thus accumulate in the bottom of the standpipe should be removed periodically by emptying through an outlet in the pipe system close to the site of the standpipe, and be supplemented by a thorough cleansing of the bottom by cleanly methods, at reasonable intervals. The frequency that this should be done will depend much on local conditions and the character of the water contained in the standpipe or tank, and the normal rate of water consumption and the relative location of the standpipe to the pipe distribution system. With an unfiltered surface water it would probably be desirable to empty and clean that standpipe at intervals of a few months, but with deep-well water or properly filtered surface water the proper interval would be years instead of months.

I trust the information contained herein will meet your requirements.

Very truly yours,

J. L. LUDLOW.

SEWERAGE.

REIDSVILLE.

REIDSVILLE, N. C., July 2, 1907.

DR. R. H. LEWIS,

Raleigh, N. C.

DEAR SIR:—You may probably know that our town here has no public sewerage. Unfortunately, when the water system was installed some years ago the mistake was made of not adding sewerage. In many instances private sewerage has been put in and the sewer pipes empty into cemented brick tanks about 4 feet x 4 feet x 4 feet deep. The water coming from these tanks is supposed to be odorless and colorless, and as a usual thing is allowed to run as the natural drainage may carry it. I am living in a house that I rent and it has this sewer arrangement, and I know there is a considerable odor when it discharges. Complaint by people near these private sewers is constantly being made to the town authorities, and I as chairman of the sanitary committee, have to deal directly with the matter. I will therefore appreciate any information you can give me about this—such as I can use as an officer of the town. I understand there are some cases of fever in the town, and in most cases it is adjacent to some of these private sewers.

With apologies for such a lengthy letter and thanking you in advance, I am,

Very truly yours,

ROBT. HAIRSTON.

P. S.—I am earnestly advocating public sewerage, and from the standpoint of an unprofessional man believe this to be the only relief. Our population is about 6,000.

RALEIGH, N. C., July 3, 1907.

MR. ROBT. HAIRSTON,

Chairman Sanitary Committee,

Reidsville, N. C.

MY DEAR SIR:—Yours of the 2d inst., asking my advice in regard to the sewerage problem of your town, has been received.

I am repeatedly on record as being unalterably opposed to the use of cesspools in any city, town or aggregation of people where any part of the water supply is derived from wells. As I understand it, the cesspool method is the one in vogue in Reidsville. I regard it as

a constant menace to the health of the community, and in my judgment it should be abolished or all the wells closed up and the people required to use only the public supply. The better plan, unquestionably, and the only one that will prove satisfactory, is the instalment of an up-to-date public system of sewers, and the sooner the town makes up its mind to adopt this the better it will be from every point of view.

I am no lawyer, but I believe that a suit for damages on the part of a person having had fever who lived in the immediate vicinity of one of these overflowing cesspools might lie.

Of course, it is an established fact that the bacterial changes which take place in what is known as a septic tank destroy a great many of the disease germs, but the process is not complete unless it is combined with a contact bed, and therefore the effluent would be capable of contaminating a neighboring well, or on the feet of flies the germs might be transmitted to the food in the neighboring dining-room or kitchen.

There is no question whatever in my mind that this method ought to be abolished and a good sewerage system installed.

Wishing you much success in your endeavors on this line, and hoping that you will not hesitate to call upon me whenever you feel that I can be of assistance, I am,

Yours very truly,

RICHARD H. LEWIS.

Secretary.

REIDSVILLE, N. C., July 19, 1907.

DR. R. H. LEWIS.

Raleigh, N. C.

DEAR SIR:—Will you be kind enough, as State health officer, to answer the following questions:

Is it safe to have a sewer, used by a tobacco factory working 400 to 450 hands, empty in a branch that goes about dry in dry weather, not more than two hundred yards from a number of dwellings?

How far would be a safe distance?

Is it safe to empty other sewers in same branch, higher up and about same distance, used by about 50 people for closets, baths, etc.?

Is it safe to dump from closets and baths used by 50 to 75 persons, besides kitchen waste from dwellings and boarding-houses, into a tank 6 feet square and 6 feet deep, and allow the water running from same to follow very small branch passing by several residences—the branch becoming very green and offensive in dry weather?

Do you not think that natural drainage, where the hills are very steep and the hollows very deep, helpful in carrying off the refuse, as the water that washes the filth into the hollows from hard rains

increases in power as it gathers, and therefore washes filth on—this, I mean, where no sewer is turned into said hollows, only the natural gathering from the land allowed to go into the branches?

If you will answer these questions to the best of your knowledge you will very much oblige. I think you have already been questioned on matters along this line, from this town, lately, but think your opinion has been withheld; at least conditions remain about the same. I want to know if the laws will not help some of us who are in constant fear on account of fever in our midst, as the town officers refuse to compel these troubles to be stopped, or at least put it off from time to time, so that should dry weather set in, when there is no heavy rains to wash the filth away, we are uneasy, therefore want your opinion. The town health officer, Dr. McGehee, has already said the conditions were unsafe; still nothing is done. In fact, the town has a sewer of its own from the jail, emptying right in town, in same branch as referred to, and runs around these dwellings. If you will kindly give this your attention you will greatly oblige.

Yours truly,

D. L. BLACKBURN.

RALEIGH, N. C., July 20, 1907.

MR. D. L. BLACKBURN,

Reidsville, N. C.

MY DEAR SIR:—Yours of the 19th inst. to hand. I do not think accumulations of filth, near enough to dwellings for flies to travel from one to the other, safe, and I think the outlet of the sewer should be further away than 200 feet.

It is a question, however, as to whether this arrangement is not just as safe as neglected surface privies, as in that case the filth is far more attractive to flies than when associated with water, and would be nearer to the people. If the tub and dry-earth system were used and the tubs regularly removed, that would probably be better than the system described. As a matter of fact, you rarely ever find surface privies regularly attended to, and I would not be surprised if the present arrangement would not be as good as anything excepting a properly designed sewerage system, which I would advise the town to put in at once.

Very truly yours,

RICHARD H. LEWIS,

Secretary.

RALEIGH, N. C., July 23, 1907.

MR. J. L. LUDLOW, C. E.,

Winston-Salem, N. C.

MY DEAR SIR:—The town of Reidsville has at present a moderate epidemic of typhoid fever—15 cases. There seems to be much diversity of opinion among its people as to sewage disposal. Conditions ex-

isting there are regarded by many as a menace to the public health. I have been asked by the municipal authorities for advice on the part of the Board in regard to the situation. I notified them that I would get you to go as soon as possible, as, being the engineer of the Board, these questions came especially under your care. So please let me know as soon as you can the earliest date that you can visit Reidsville.

Sincerely yours,

RICHARD H. LEWIS,

Secretary.

WINSTON-SALEM, N. C., August 3, 1907.

DR. RICHARD H. LEWIS,

Secretary State Board of Health, Raleigh, N. C.

MY DEAR DOCTOR:—In accordance with your request I visited Reidsville on Tuesday last, July 30th, for the purpose of advising the city authorities relative to the sanitary condition of the town, regarding which they appealed to the State Board of Health for advice, and further to investigate and advise them relative to the cause of the excessive number of typhoid cases which have recently occurred in that town.

I spent the entire day there Tuesday, examining the general sanitary conditions of the town, more particularly two points of sewage disposal of which complaint had been made, also made as careful investigation as my time would permit, to locate the source of typhoid fever infection.

I found the general sanitary conditions to be bad, both in respect to water supply and sewerage, which I inspected thoroughly and advised the Board of Aldermen relative thereto.

Regarding the typhoid situation, I received authentic information, from the health officer, Dr. McGehee, and two other physicians, of about thirty cases. The colored practicing physician I failed to see, but he probably has some cases, which would run the total number of cases up to thirty-five or forty.

Of these cases I personally visited eighteen, accompanied by the health officer, and endeavored to learn the source of infection. Of these I found seven cases among the users of city water, and could find no other apparent source possible in at least six of these seven cases, though I made careful inquiry as to other possible sources of infection by the use of fruits, vegetables, milk and other sources of drinking-water and personal contact with other cases. One of these seven cases may have been caused by direct contact from nursing previously a case in the same family, but the former case appeared to have been traceable to the public water supply.

In most of the remaining eleven cases visited, the source of infection appeared to be in well waters, though some of these had, to some extent, used city water. In most of the cases that I failed to

visit, from my inquiries of the attending physician, the patients appeared to have been in most cases users of well water and were infected from that source.

Relative to the public water supply, I should state that the large dug well, with the connecting pipes radiating therefrom, located in a branch meadow somewhat distant from the town, and apparently only slightly exposed to infection, has become inadequate to meet the needs of the town, and about a third or a half of the water supply has been drawn from the branch nearby and delivered unfiltered to the pipe distributing system. As nearly as I could learn, this branch had been used more or less for some years, and the State Board of Health has repeatedly advised that this water be filtered, but it has never been done. This branch has a watershed area of about one square mile, and by inquiry and a hasty personal inspection made of this watershed on a former visit to Reidsville, the watershed appeared to have a population of about forty or fifty persons. The area of the watershed being so small and the dwellings of these persons not very far removed from the branch or even from the waterworks station, infection of the public water supply appears almost certain and direct from any typhoid case that might obtain on the watershed. From my inquiry I could only learn of one case having occurred on the watershed, and that occurred about last November or December. But it is very easy to conceive that there may have been other cases, before or since, which were not recognized and treated as typhoid fever.

With the evidence obtained I am thoroughly satisfied that the use of water from this branch without effective filtration is very dangerous to the public health of the town, and I advised the health officer, the mayor and several members of the board of aldermen that it was their imperative duty to at once warn the people of the danger and advise the consumers that the water should not be used for drinking purposes without first being thoroughly boiled. I did not receive positive answer and assurance that they would give such notice, so requested that they consider the matter at once, and advise you whether or not they propose to follow this advice and issue the notice to the public, further telling them that it was my duty to report to you my advice in the matter; also that it was your duty, under the rules regulating the State Board of Health, to issue this notice yourself, as Secretary of the Board of Health, in case they should fail to do it. Of course, you will understand that I was careful to make this statement in such a manner as to give no offense, and feel certain that no offense was taken.

Relative to the three particular sewage accumulations, one from a group of five or six residences collected in an improvised septic tank of fairly good efficiency, at a point quite remote from residences, discharging the effluent into a very small branch; another being the

raw sewage discharged from the Penn factory and others into another very small branch quite near to several residences; the third the raw sewage discharged from the sanitarium in a very small ditch branch near the thickly settled portion of the town. In the first-named case I advised that no particular injury to the public health was probable, and that it was a fairly good choice of necessary evils in the absence of a general sewerage system. In the other two cases my advice was that both were very bad and should be removed to some point further from the town, unless a general system of sewerage is likely to be installed soon, in which case I thought the present condition might be endured rather than put the parties to the expense of carrying the sewage further away.

I further advised the city council that the installation of a filter plant was absolutely imperative should they continue to use this branch water as a public supply. Also advised the importance of establishing a general sewerage system for the town at the earliest possible date and to inaugurate other reforms of general sanitation, including the closing of several wells the surroundings of which appear to be dangerous, all of which could be more effectively done after a sewerage system is installed, a safe water supply obtained, and the distributing pipes extended.

In connection with my investigation I sent to our Laboratory of Hygiene six samples of water for analysis, one from the branch forming part of the public water supply and the other five from different wells which appeared to be the source of infection of several cases of typhoid fever. I have not yet received the report of the analyses of these waters, but feel quite certain that they will corroborate my conclusions reached from personal inspection; and whether or not the analyses should show positive infection, I shall still adhere to the opinion that the present water supply, unfiltered, is unsafe, and that many of the wells in the factory districts are likewise unsafe and dangerous to the health of the citizens of the town.

I am mailing a copy of this letter to Mayor Montgomery of Reidsville.

Very truly yours,

J. L. LUDLOW.

Member and Sanitary Engineer, State Board of Health.

WINSTON-SALEM, N. C., August 6, 1907.

MAYOR MONTGOMERY,

Reidsville, N. C.

DEAR SIR:—Under date of August 2d, I sent you a copy of my report to Dr. Lewis, Secretary of the State Board of Health, relative to my recent visit to Reidsville to investigate the sanitary conditions and the typhoid fever situation. As stated therein, I had not at that time received the report of the analyses of the waters sent to the

State Laboratory of Hygiene, but this morning's mail brings these reports. I would advise relative to the results of these analyses as follows:

Well No. 1, situated near the Walker Mill and from which the typhoid fever cases, Tucker and Harrison, had used water, is reported by Dr. McCarthy, the Biologist of the Board of Health, to contain putrefactive bacteria, very high chlorine, and to be badly polluted water.

Well No. 2, situated in Manly's yard and from which typhoid fever patients Strickland and Turpin have been using water, is found to contain putrefactive bacteria and high chlorine, though, apparently, free from fecal germs.

Well No. 3, from which typhoid patients, the two Clayton children, had used water for drinking purposes, contains putrefactive bacteria, high chlorine, *B. Colicommunis* in 5 c. c. of water, and shows recent fecal pollution.

Well No. 4, from which typhoid patient Mrs. Mary Brice used drinking-water, is found to contain putrefactive bacteria, also high chlorine, and *B. Colicommunis* in 5 c. c. The analyst states: "This water is polluted and has been for some time."

Well No. 5, from which typhoid fever patient Mrs. Fisher used drinking-water, is found to contain putrefactive bacteria, high chlorine, and *B. Colicommunis* in 5 c. c.

The sample from the branch of the waterworks station is found to contain putrefactive bacteria and to be high in chlorine, *B. Colicommunis* found in 5 c. c. The analyst states that the "Water is slightly contaminated; contamination recent or current; dangerous for drinking-water unless filtered or boiled." From the above it appears that all these wells from which samples were taken are dangerous, with Well No. 2 the least, and that they are all dangerous to use for drinking-water unless the water is first thoroughly boiled.

In reference to the branch water which you have been using as a part of your public water supply, having a chlorine content of eleven parts per million, which is apparently excessive in your locality and would itself indicate fecal pollution, and containing the usual putrefactive bacteria, as well as the *B. Coli*, which is always present with fecal pollution, the water is very suspicious, and such an analysis, considered together with the character and exposure of the watershed supplying this stream, and the six or seven typhoid cases, which apparently are traceable directly to the use of this water for drinking and other purposes, this water must be condemned as unsafe for a public supply unless it is first thoroughly filtered; and until a filtration plant can be established the use of this water should preferably be discontinued; but if it must be used, the users should be warned of the danger and advised and urged to thoroughly boil the water before using it for drinking purposes.

Very truly yours,

J. L. LUDLOW.

RALEIGH, N. C., August 7, 1907.

HON. R. S. MONTGOMERY, *Mayor*,*Reidsville, N. C.*

MY DEAR SIR:—I am in receipt of the report of Colonel Ludlow upon the sanitary condition of Reidsville, bearing upon your outbreak of typhoid fever, after seeing the report of the analyses of water sent by him to the State Laboratory of Hygiene.

With such facts before us there is nothing for us to do but to endorse Colonel Ludlow's suggestion; that is, to install as soon as possible a filtering plant for your public water supply, and in the meantime urge upon the people the necessity of boiling all their drinking-water. The objection to the boiled water is its flat taste, but if it is poured from one vessel to another from a considerable distance it soon becomes aerated and regains its life.

I would also urge upon you the importance of your city's installing as early as possible the proposed sewerage system. A public water supply without a sewerage system is, in my judgment, a curse instead of a blessing, so far as the health of the community is concerned. It is useful for manufacturing purposes and is a luxury to those who can afford it, but without sewers to take away the waste water, generally polluted with human excrement, it is against the public health.

Hoping that you may be able to carry out at an early date both of these suggestions and that by taking extra precautions in the matter of boiling water, seeing that dry earth or lime is used in the surface privies after each evacuation and that they are thoroughly cleaned at least once a week—better twice—your typhoid fever may soon be checked, I am,

Yours very truly,

RICHARD H. LEWIS, M. D.,

Secretary.

RALEIGH, N. C., August 28, 1907.

HON. R. S. MONTGOMERY, *Mayor*,*Reidsville, N. C.*

MY DEAR SIR:—I have been informed that no steps have been taken by your town to carry out the suggestions made by Colonel Ludlow, with a view to the prevention of the spread of typhoid fever. I think it more than probable that some mistake has been made about this, and I therefore write for information.

I enclose a copy of an Act to Protect Water Supplies, and would refer you to section 9 of the same, and would add that I endorse the recommendations made by Colonel Ludlow in his report. You will please accept this letter as the notice required of me in section

9. Of course it will take time to install a filter, but there is no reason why the people should not boil their drinking-water until the supply has been rendered safer.

Hoping to hear from you at your earliest convenience, I am,

Yours very truly,

RICHARD H. LEWIS, M. D.,

Secretary.

REIDSVILLE, N. C., September 18, 1907.

DR. R. H. LEWIS,

Secretary State Board of Health,

Raleigh, N. C.

MY DEAR SIR:—Replying to yours of sometime ago in regard to the action taken here by the town authorities concerning the city water, beg to advise you that upon receipt of your letter I took the matter up with our health officer and requested that he write you at once, giving you the condition of affairs at that time.

Upon the suggestion of yourself and Mr. Ludlow, we suggested to the people of the town that all water for drinking purposes should be boiled before using. We also had our health officer to have published in both our town papers the statement made by Mr. Ludlow in regard to the conditions here.

We have, I assure you, taken every precaution we could, under the circumstances, to overcome any trouble that should be caused by the use of impure water or the unsanitary condition of the town. It is true that we have not as yet installed a filter system here, as we have felt all the time that it was not absolutely needed, and while it is possible we may have this to do sooner or later, still we have been able to increase our water supply very materially, and we believe it to be good water, consequently it would hardly be advisable for us to go to the expense of the installation of a filter system just now. As to the matter of public sewerage, I judge that this question will be voted upon at some date in the near future. In the meantime we propose to take every precaution to keep down any disease arising from this cause.

As to the typhoid fever patients, I am glad to report to you that we now have a very few, if any, and out of all the cases reported to you by Mr. Ludlow upon authority of our physicians here, there has only been in the town, to my knowledge, one death caused by typhoid fever.

Hoping that the action we have taken in this matter will meet with your approval, and assuring you of our appreciation of your kindness in the matter, I am,

Yours very truly,

R. S. MONTGOMERY,

Mayor.

RALEIGH, N. C., September 26, 1907.

HON. R. S. MONTGOMERY, *Mayor*,*Reidsville, N. C.*

MY DEAR SIR:—Absence from home has prevented an earlier acknowledgment of your very courteous letter of the 18th inst.

I beg to say that you have carried out our suggestions as far as possible for the present. I would advise, however, that you do not let up on the filter question. I am satisfied that it would be to the interest of your town to install one. There is no question whatever about the importance of a sewerage system. A public water supply without a system of sewers is a menace rather than a protection to the public health. I would call your attention to an article bearing on this subject which you will find in the forthcoming *Monthly Bulletin*, of which I suppose you receive a copy regularly.

Appreciating the spirit shown by you in your administration, I am.

Yours very truly,

RICHARD H. LEWIS, M. D.,

Secretary.

BURLINGTON.

BURLINGTON, N. C., September 3, 1907.

DR. R. H. LEWIS,

Raleigh, N. C.

DEAR SIR:—Just now we are confronted with some questions of sanitation which we do not know how to handle properly. We feel that we greatly need some suggestion from you, and will thank you to try and arrange to meet with us on Friday night of this week; but if you find this impossible, perhaps you can write us, and if so, we will thank you to give us some information on the following matters:

1. Where a town has not a sewerage system, how can sewage from water-closets and kitchen sinks be best disposed of?

2. What kind of cesspool or septic tank would you recommend? And is it possible to have one thoroughly sanitary?

We have a scavenger who removes all matter from privies, lots and stables; but there are some residences in town in which water-closets, lavatories, and kitchen sinks are used. These families are using a cemented tank for catching all matter from the pipes, and in this tank there is an overflow pipe, that is, when the tank fills to a given point it then runs out and into another that is perforated, and the matter that goes into this tank is allowed to seep into the ground and be thus disposed of. Others have those which are of but one compartment, but with an overflow pipe. They claim that all solid matter collects in this tank and can be cleaned out when desired,

and that the liquid matter is constantly running out through this overflow pipe. In most all cases the water or liquid matter is emptied into the drain along the sidewalks of the city. There have been complaints about this, and the complainants may have grounds for it, but some of our physicians say they have not. So you see, Dr. Lewis, that we are really in a rather perplexing condition.

We shall be glad to have you with us; but if you can't come, please write us fully.

Very truly yours,

A. F. BARRETT, *Mayor*.

Per J. L. SCOTT.

RALEIGH, N. C., September 7, 1907.

HON. A. F. BARRETT, *Mayor*.

Burlington, N. C.

MY DEAR SIR:—Upon my return after a short absence I find yours of the 3d inst., asking for information in regard to the proper disposal of sewage and kitchen waste in a town having no sewerage system, what kind of cesspool or septic tank would I recommend, and is it possible for one to be thoroughly sanitary.

In reply I beg to say that it was impossible for me to have been with you last night and it would be a great inconvenience for me to go at any time in the immediate future.

Matters of this kind really come under the jurisdiction of Colonel Ludlow, the engineer of the Board, who lives in Winston-Salem. He is a real expert in all matters relating to water supplies and sewerage systems. I would suggest, therefore, that you write to him, saying that you do so at my request, he being the proper member of the Board to advise in such cases, and that I would be glad to have him visit Burlington and talk to your Board on the subject, if it can be arranged.

My own position in regard to cesspools in cities and towns deriving their supply of drinking-water from wells is one of unalterable hostility. I am utterly opposed to the use of cesspools in communities using wells. If there is any objection to the infection of drinking-water by human excrement it seems to me to be entirely conclusive that cesspools so arranged as to overflow and saturate the surrounding soil, through which water will percolate and find its way into the well of the proprietor, or into some neighbor's well, should not be allowed. On this account a public water supply without a system of sewers is, in my opinion, injurious rather than helpful to the public health. A large majority of the population cannot afford to utilize it, and, consequently, the health of the community as a whole is jeopardized by this comfort and luxury on the part of those who can afford it.

Colonel Ludlow may be more liberal in his views than I am, but I certainly do not think cesspools ought to be permitted. Septic

tanks, in order to be thoroughly effective, should have a contact bed, so that the effluent may be exposed to the oxygenating effect of the air, or, as we put it scientifically, to the action of the aerobic bacteria. Septic tanks with overflow pipes in the surrounding soil would not be objectionable but for wells furnishing drinking-water. I think the emptying of the overflow into the gutters of the town is much more objectionable than when turned into the soil, as in the first instance it would be within the reach of flies, which, as we know, are spreaders of disease.

Trusting that this may be helpful, and that Colonel Ludlow may be able to advise you further and more intelligently, I am,

Yours very truly,

RICHARD H. LEWIS, M. D.,

Secretary.

SUBURB OF WILMINGTON.

NORTH WILKESBORO, N. C., September 9, 1908.

COLONEL J. L. LUDLOW,

Winston-Salem, N. C.

DEAR SIR:—Miss Mary Bridgers, the owner of a new settlement on the exact confines of Wilmington, will either directly or through her architect, Mr. Stephens, submit a plan for a septic tank for sewage disposal to serve her property, for your opinion, as the engineer of the Board of Health. This is made necessary because she proposes to empty the overflow from this settlement into a creek which directly affects a public stream and one of the feeders of Smith's Creek, an affluent of the North East River, which empties into the river just about three-quarters of a mile above the intake of the city water-works. The county commissioners have, in accordance with the law, made this reference to you a condition precedent to their approval of this movement. I have written Miss Bridgers that her plans should include an exact plan of lots at present sold and those which her property will hereafter provide for, also a profile map of the property, with a certified plan of the sewers now ready for use to cover such property, including size of mains and laterals and location of man-holes, etc.

As I understand the situation, this work has been prepared by a Mr. Porter, under the instruction of Mr. Stephens, who is Miss Bridgers' architect. Mr. Porter is only a chemical engineer, whatever that may be. That was his statement to me, and I wrote Miss Bridgers that he should tell you to whom he has appealed for consultation in the preparation of his plans and specifications.

This settlement is just beyond Seventeenth Street and between that street and the Green's Creek, all east of Wilmington proper.

There has been some work done on this matter already and was sent in to me, but it was so inexact that I refused to submit it. If there is anything else that I can do in this matter, I will be glad to serve you. I will be in Linville for forty-eight hours beginning the 12th prox. and in Asheville at Swannanoa Hotel on the 18th and 19th.

With kindest regards, I am, sir,

Yours truly,

GEORGE GILLETTE THOMAS,

President North Carolina Board of Health.

WINSTON-SALEM, N. C., September 19, 1908.

DR. GEORGE GILLETTE THOMAS,

President State Board of Health,

Asheville, N. C.

DEAR SIR:—Yours of September 9th was duly received, and the plans covering the sewage-disposal plant for Carolina Heights reached me yesterday. I have given the matter attention and am writing the parties to-day relative to it, in which I gave my approval to the plans for the sewage-disposal plant, but have made some criticisms to the general layout of the sewers, and suggested some modifications.

Very truly yours,

J. L. LUDLOW.

WILMINGTON, N. C., September 11, 1908.

COLONEL J. L. LUDLOW,

Winston-Salem, N. C.

DEAR SIR:—The attached prints are of a sewage-disposal plan and lines for a plant we wish to install at Carolina Heights, Wilmington, N. C. The local sanitary board have referred it to the State Board, but owing to the absence of Dr. Thomas we are handing you the prints direct.

We have a letter from Dr. Thomas, dated North Wilkesboro, N. C., September 9th, stating that he was writing you on that date, and that addressing you direct would hasten the matter through.

We would much prefer to have more fall to our lines, but local conditions will not permit, as you will see by profile; but, although we do not think it absolutely necessary, we can install flush tanks, should you deem it advisable.

The following are some of the essentials which do not appear on the plans, but which aid in grasping the significance and applicability of the different dimensions and parts:

Plant designed for 81 houses.

Five hundred people, 100 gallons sewage per capita.

Settling time, 12 hours.

Settling tank capacity, 25,000 gallons.

Grit chamber to hold solids heavier than water.

Five scum boards to hold in the tank floating solids.

Both grit and scum, after becoming inoffensive, to be collected in sludge basin and removed.

Construction of settling tank in two parts to allow continuous treatment of sewage while cleaning out one-half and to provide proper treatment of the small flows of sewage during the development of the Heights.

Sprinkling filter, one-twentieth of an acre.

Will oxidize a settling tank effluent to a non-putrescible, non-offensive liquid.

Giving a total purification in the plant of about 90 per cent, as judged by analysis showing bacteria, organic nitrogen and oxygen consumed.

The plant, constructed according to these plans and given a small amount of intelligent care while operating, will give no offense or cause for complaint from the people living near.

If you can consistently do so, would appreciate your giving your approval at earliest possible moment.

Yours respectfully,

B. H. STEPHENS.

WINSTON-SALEM, N. C., September 19, 1908.

MR. B. H. STEPHENS,

Architect and Consulting Engineer,

Wilmington, N. C.

DEAR SIR:—Your letter in reference to sewage-disposal plant for Carolina Heights, a small suburb of Wilmington, N. C., under date of September 11th, together with blue prints of proposed installation, are found upon my return from several days absence.

Referring to the said plant, would advise that the disposal plant, as shown on the plans, when operated with a reasonable degree of intelligent supervision, should give very satisfactory results and render the sewage to a suitable degree of purification to permit its discharge into the stream proposed. Such a plant would meet my approval and in my judgment should be acceptable to the State Board of Health, to which body the matter has been referred by the county commissioners for approval.

With the plan of sewers as laid out, however, I think there would arise considerable difficulties in operation and in the delivery of the sewage to the disposal plant. The pipes have insufficient gradients and are so small that frequent stoppages would be quite probable.

I am not advised as to whether this feature of the installation has been referred for my approval or not, but if so, I would withhold approval, subject to certain modifications in the plans, viz.: Substitu-

tion of manholes where lampholes are shown on the plans at points of change in alignment and grade; the placing of automatic flush tanks on the head of all sewer lines; the elimination of all 4-inch sewer lines except for individual house connections; the substitution of 8-inch pipe for 6-inch in the main sewer line, and the increase of gradients to not less than three-tenths of 1 per cent. The latter requirement, it appears, may be accomplished by decreasing the depth of the contact bed of filter with a corresponding increase in area, or by lowering the elevation of the septic tank, which would probably require a different plan of distribution on the filter contact bed.

Very truly yours,

J. L. LUDLOW.

Consulting Engineer and Member N. C. State Board of Health.

WILMINGTON, N. C., September 23, 1908.

MR. J. L. LUDLOW,

Engineer North Carolina State Board of Health,

Winston-Salem, N. C.

DEAR SIR:—This will acknowledge receipt of your letter of the 19th, in which you advise that a plant constructed as shown on blue prints referred to you would meet with your approval, but that there would be some question in your mind as to the sewage lines. Referring to the latter, would say that to follow the several features referred to would work a hardship on us at this time inasmuch as the engineer who had the matter in charge before it came to our hands had had considerable of the mains installed, together with a great many of the manholes, and, in short, has left the entire situation in very bad shape, and it is our desire to make use of as much of the work already done as possible; we could, however, substitute an 8-inch line from the last manhole to the tank in place of the 6-inch and install flush tanks at the heads of each line, as well as substitute manholes at the point where lampholes are shown. We were of the opinion that the 4-inch lines would be sufficient to handle the sewage that would pass through them, for the reason that the houses that are being constructed to be cared for by these lines are small, averaging one bathroom and one kitchen to each house. We are also requesting those connecting with the line to put in grease traps.

Would say further that it will be a great many years before each lot will be occupied; at the present time there are only ten houses completed and at the rate we are going it would take eight or ten years to put the plant up to its full capacity, and at that time it would probably be necessary to install new pipe lines, which could be enlarged.

We trust that with the foregoing explanation you will see your way clear to approve the work as outlined and alterations herein mentioned.

Yours respectfully,

B. H. STEPHENS.

WINSTON-SALEM, N. C., September 25, 1908.

MR. B. H. STEPHENS,

Wilmington, N. C.

DEAR SIR:—I have your favor of September 23d. in reply to my letter to you under date of the 19th. relative to the proposed sewerage system for Carolina Heights suburb. I note your statement that considerable of these sewer lines had been laid according to the plans submitted to me and from which I withheld my approval, and note your hope that in consideration of the alterations and changes that you find it feasible to make, as set forth in your letter, that I may modify my former advice in the matter and approve the work as outlined in your letter.

I have given this matter careful consideration and fully appreciate the position in which the owner of the property is placed by reason of having a portion of this work already constructed, and should be pleased if I could see my way clear to modify my former statements and recommendations, but am unable to do so, and can only reaffirm the statements and recommendations contained in my letter referring to the matter under date of the 19th inst.

Very truly yours,

J. L. LUDLOW,

Engineer and Member of the State Board of Health.

TYPHOID FEVER AT COUNCIL.

CLARKTON, N. C., June 2, 1907.

DR. R. H. LEWIS,

Secretary State Board of Health, Raleigh, N. C.

MY DEAR DOCTOR:—The epidemic of typhoid fever that we had such a time with last year at Council has broken out again. Two people, a man and a woman, have already died with it this year and several more have it. Eight or nine died last year, which was a pretty big per cent of the population. If you can suggest anything to stop it, please let me know. We have "cleaned up" in a general way and limed and burnt, etc. They keep after me to do something more and I don't know anything more to do.

Please send cases for two or three samples of water to be examined.

Thanking you in advance.

Yours very truly,

LESLIE B. EVANS.

Superintendent of Health, Bladen County.

RALEIGH, N. C., June 26, 1907.

DR. LESLIE B. EVANS.

Clarkton, N. C.

MY DEAR DOCTOR:—I am sorry to learn that you have another epidemic of typhoid on your hands, and regret very much that, owing to the absence of Dr. McCarthy until the 15th of July, our Laboratory will be closed and the analyses desired cannot be made until after that date.

I would recommend that the drinking-water used in the community be boiled. That, of course, gives it a flat taste, but this trouble can be remedied by pouring it for a little distance from one vessel to another, especially through the rose of a watering pot, which, as you know, makes a number of fine streams, the object being to aerate the water.

You also know the opinion that has grown very much since our Spanish War and the printing of the report of the Commission of Army Surgeons on the outbreak of typhoid fever in our camps, that typhoid fever is transmitted very frequently by flies and by personal contact. The commission stated in their report that in the epidemic at Chickamauga, involving thousands of cases, there was no evidence whatever connecting the water supply with the fever, and they laid it chiefly to the flies.

Now the task to be accomplished is to so arrange things that flies cannot come in contact with the bowel discharges of the typhoid-fever cases, for if they do they can fly directly to the dining-room or kitchen and infect the food. Now, as people often have bacilli before they are actually attacked, and as they persist certainly for several weeks after the patient has actually recovered, you can understand how all surface privies are liable to be inoculated and consequently become a source of danger on the fly theory. I would, therefore, suggest that lime or ashes or, best, rich mould in the form of dust, be used to cover every evacuation, and that the privies be cleaned not less frequently than twice a week.

Another method that perhaps would be better would be to use carbolate of lime or fluid carbolic acid, as flies dislike very much the odor of carbolic. Another protection would be to have a flat or swinging door in the rear so as to shut out the light, as flies avoid darkness.

If the people in the community have respectable privies they ought not to have any trouble in carrying out these suggestions, but the difficulty is that in some communities they do not have any privies at all. In that case the danger is still greater; but, knowing what you want to accomplish, a man of your knowledge and common sense, I am satisfied, could give the proper instructions.

Very truly yours,

RICHARD H. LEWIS, M. D.,

Secretary.

COUNCIL, N. C., July 22, 1907.

DR. RICHARD H. LEWIS,

Secretary State Board of Health, Raleigh, N. C.

DEAR SIR:—We are now laboring under the second year of the typhoid-fever epidemic, which has been raging here since about April, 1906; and finding that we are losing ground in fighting it, beg to ask that you come to our assistance immediately.

We beg to refer you to the following physicians that are treating the cases, who have so far not been able to cope with the situation, and advise us to call you to our aid: Dr. D. W. Bullock, Wilmington, N. C.; Dr. L. B. Evans, Clarkton, N. C.; Dr. G. L. Clark, Clarkton, N. C.; Dr. B. T. Atkins, city.

Statistics show that we have lost within the last twelve months 33½ per cent of our population, and that it is more fatal than any smallpox epidemic that the county has suffered within our recollection.

We wish you to come and arrange to analyze the water supply, etc., and see if you cannot assist us in locating the cause. If you can, come prepared to do the work here. Will furnish and prepare a room for the work.

We have purchased some fifty barrels of lime for free distribution, and are using it freely and will continue to use all precautions possible.

Kindly advise when we may expect you.

Yours very truly,

J. A. MEEDER, *Mayor*.

W. D. SHAW,

B. J. SANDERLIN,

W. C. VICK.

Commissioners.

RALEIGH, N. C., July 23, 1907.

HON. J. A. MEEDER, *Mayor*.

Council, N. C.

MY DEAR SIR:—Yours of the 22d inst., in regard to the epidemic of typhoid fever prevailing in your town, has just been received.

In reply I beg to say that I am so situated, and will be for the next fortnight, that I cannot get away from home. I also regret to say that the equipment of our Laboratory, in both men and apparatus, will not permit analyses being made on the spot. On June 26th I received a letter from Dr. L. B. Evans, Superintendent of Health of Bladen County, under whose jurisdiction this matter comes, in regard to this matter, and I enclose a copy of my reply, from which you will refresh your mind as to the management of typhoid fever, which he, no doubt, has explained to you.

Dr. McCarthy having returned, I have had three sterilized bottles for samples of the water of your town sent to Dr. Evans, that we may ascertain the healthfulness of your water supply, finding out whether it is infected or not.

In addition to what I said in my letter to Dr. Evans, I think, as the fever seems to be so persistent, that it would be advisable to thoroughly disinfect the rooms occupied by persons sick of typhoid fever after their death or recovery. In order to carry out the proper sanitary rules strictly much attention and courage is required.

If you still think it necessary to have a member of the Board visit your town, the proper course to be pursued would be to apply to Dr. Evans, the County Superintendent of Health, and ask him to request the attendance of a member of the Board. I would suggest that the President of the Board, Dr. G. G. Thomas, who lives in Wilmington, could visit Council with comparatively little inconvenience and expense.

I would impress upon you the importance of everybody boiling their drinking-water until the analyses are made, but I am afraid you will find it an extremely difficult matter to get people to do this.

Hoping that you can soon control the outbreak, I am,

Yours very truly,

RICHARD H. LEWIS, M. D.,

Secretary.

RALEIGH, N. C., July 26, 1907.

DR. GEORGE G. THOMAS,

*President North Carolina State Board of Health,
Wilmington, N. C.*

MY DEAR DOCTOR:—I enclose a letter from Dr. Evans, Superintendent of Health of Bladen County, which explains itself. The Mayor of the town has also written to me in regard to it and set forth a very serious condition of affairs. This is the second year they have had an epidemic of large proportions for so small a community.

As you are so near that you could run up in the morning and return by dinner, I hope you can go. It would take me quite a considerable time to manage it; and another trouble is that my partner is away from home and will not return for ten days more, consequently it is more inconvenient than usual for me to get away. Of course, however, I am at your command. Please let me know as soon as you decide what is best to be done.

Very truly yours,

RICHARD H. LEWIS, M. D.,

Secretary.

WILMINGTON, N. C., July 3, 1907.

DR. R. H. LEWIS,

*Secretary State Board of Health,
Raleigh, N. C.*

DEAR DOCTOR:—Pursuant to your request, I have this day visited Council and have gone over the situation there with Dr. Evans, Superintendent of Health of Bladen County, and beg leave to report the findings as follows:

In April, 1906, the wife of Mr. J. A. Meeder sickened with typhoid fever. During the year 1906 there were four other cases in this house. In January, 1907, his sister-in-law, Mrs. Meeder, came from Norlina to live with Mr. J. A. Meeder. Three weeks after her arrival she developed typhoid fever and died. A negro boy, who was in the employ of Mr. Meeder during the entire time of this fever, developed the disease about three weeks ago, and is now sick in the hospital in this city. The next case was in the house of Mr. W. C. Vick, himself and wife. This house is about fifty yards from Meeder's and the next house to it. During the time that Meeder had typhoid in his family, Mr. R. E. Vick, who lives just beyond Mr. W. C. Vick, the two brothers about the same distance apart, had two cases in his house—two daughters, small children, one of whom died. Next was the daughter of Mr. J. S. Grimsley, who worked in a store on the other side of the railroad immediately opposite Meeder's house, about seventy-five yards from this house, and the water she drank came from a well in an open space near the store. She died. Mr. W. D.

Shaw, who lives back of Meeder's house about one hundred yards, had one son and one daughter sick with typhoid fever some time during the summer of 1906, both of whom recovered. In 1907 his son-in-law, Mr. C. A. Edwards, who had been there about five months, sickened with typhoid fever, and died in June, after six weeks' sickness. Mr. J. Q. Nye, who lived in a house well back in the woods from the village, but worked in a shop owned by the Councils near the point of the original outbreak, the Meeder's house, died in October. His cook, a negro woman, sickened shortly after he did and died. A negro by the name of Graham, living on the other side of the railroad from the above reported cases, except the Grimsley case, had typhoid fever and died. This is a doubtful case, because he came home from Chadbourn sick. In 1907, as I have already noted, Mrs. Meeder, sister-in-law of W. D. Shaw, died, in June last. In addition to these, there was a white section-hand by the name of Montgomery Benson, who had typhoid fever, as well as a small child. He died.

This makes 19 cases, with 8 deaths, which is about 42 per cent. This seems worse when you consider that within the corporation limits of the town, which is one mile square, there lived, according to the best estimates by persons with whom I talked, only about seventy people. So that you will see that this was a right serious condition of affairs; these cases occurring between April, 1906, and June, 1907. The town is built in a flat country, from which the drainage is very imperfect. The evidence of last night's rain and of the rain of the previous day, as I saw it to-day, was apparent everywhere in mudholes in the roads and in the stagnant waters standing in the ditches.

All of the privies, as you would expect, are surface privies, to which very little care is apparently given.

Mr. Meeder claims that his household was carefully looked after, and that all of the discharges were disinfected under the care of a nurse. This is certified to also by Dr. Evans. Nevertheless, the fever developed in every member of his family, excepting himself, and the infection was evidently resident in the house after they recovered, because his sister-in-law developed it three weeks after her arrival, and the negro boy went down with it at a later date. It is probable that the two Vicks, who lived next to Mr. Meeder, visited the house, but of this I am not certain; but it is easily understood how flies might have carried the contagion from Meeder's house to either one of these houses. It is more difficult to account for the other cases, excepting the Grimsley girl, who might have been in some way infected by insect convection, as her father's store was immediately across the railroad from Meeder's, about seventy-five yards distant.

The water supply of the town usually is from driven wells, averaging about twenty-three feet in depth. This pipe goes down through a topsoil of sand between two and three feet in depth, then through

a loose yellow clay fourteen feet, and through a bluish clay and into sand again, which is the water-bearing point. The pumps of Meeder and Shaw are both driven immediately under the back porches, and you can understand that, if there was any infected liquid material turned out anywhere near these pumps, the drip-water would naturally sink down through this loose soil to the source of supply. Mr. McCarthy has examined the water of the two wells, and says that both of them are polluted, carrying intestinal bacteria and rather a large amount of chlorine, both of which indicate fecal pollution; but the origin of the fever in Mr. Meeder's family is a matter of grave doubt. There was no one sick in it up to the time his wife was taken down, nor had there ever been a case of typhoid fever in the neighborhood since the town was started, as far as any one knew. But Mr. Meeder keeps a house in which he offers hotel accommodation to traveling men and others, and it is possible that in this way infection may have been carried into the household. The conditions existing around the town, bad drainage, stagnant water, and small puddles in the roads, would all help out, but, of course, not produce disease.

I regret to say that it seems to me that it is necessary for us to come to the conclusion that the directions for the care of premises and persons sick with typhoid fever, so plainly set out in the Board's leaflet, have not been observed. I noted, with some surprise, the consolation which they gave themselves in showing me little scattered heaps of slaked lime under the houses, around the mudholes, and in the privies. No doubt, this lime was thoroughly slaked before distributed, and in which case it would be very unevenly distributed at any rate. I advised them in using lime to use only the milk of lime, and to always use it freshly prepared. My advice to Mr. Meeder, who is Mayor of the town, was to have his town drained thoroughly by sufficient ditches and to have the surface privies carefully looked after. They should have boxes in all of the privies and charcoal or lime and clay to dry the contents of the boxes, and proper provision made for their frequent emptying and cleaning.

Right now a good many in the neighborhood are immune from typhoid fever. Quite a number with whom I talked had had typhoid previously, and I am disposed to think that the stress of danger is over, as there is no sickness of any consequence in the community.

It is worth while to say that notwithstanding the amount of stagnant water in ditches and on the surface in and around the town, there is no malaria present, nor is there any history of outbreaks of malaria previously. Dr. Evans assured me of this fact.

It is also to be noted that there is no milk drank in the town. I believe only one person in the town owns a cow. The only other milk used is condensed milk. So that this common source of infection is cut out.

There is no doubt that the directions of the leaflet which had regard to the care of the hands of assistants in typhoid cases were often disregarded, as well as for the care of all of the belongings of the patients. I think, however, that now that the disease is stopped at this point that it will hardly reappear unless there is a fresh infection from the outside.

Yours very truly,

GEORGE GILLETTE THOMAS,
President State Board of Health.

RALEIGH, N. C., August 3, 1907.

DR. LESLIE B. EVANS,

Superintendent of Health, Clarkton, N. C.

MY DEAR DR. EVANS:—I am in receipt of the report of Dr. Thomas in regard to the typhoid-fever situation at Council. I agree with him in his views, and would urge, therefore, upon the community the strict compliance with the instructions set forth in the leaflet, which has been distributed; the proper care of surface privies (such as described by Dr. Thomas), the drainage of the town and extra care in regard to drinking-water. The water from the pumps of Messrs. Meeder and Shaw, which was found by Dr. McCarthy to be infected with intestinal bacteria and a rather large amount of chlorine, both of which indicate faecal contamination, should be invariably boiled before being drunk. A better plan would be to abandon these wells altogether and sink new pumps not less than 75 feet from the present infected location. The drainage power of a pump is supposed to be represented by an area the radius of which is three times as great as the depth of the well, and, according to Dr. Thomas's report, the wells in the town average 23 feet in depth. While there will probably be no more typhoid fever among the present members of their families, visiting friends and relatives might at any time be infected.

Eternal vigilance is the price of health, as well as liberty, and the eradication of a poison that has obtained such a hold as the typhoid bacillus has upon Council will take time and the expenditure of some money. The population being so small and the number of cases in the past two years so many, it is to be hoped that the susceptible material has become exhausted and that there will be very little, if any, further trouble to the present residents. But it is for the stranger within their gates that I am now chiefly solicitous about. Besides giving the disease to their friends and kinsmen, they distribute it to different neighborhoods, or are liable to do so, unless the present conditions are remedied.

Yours very truly,

RICHARD H. LEWIS, M. D.,
Secretary.

OPINIONS OF THE ATTORNEY-GENERAL.

WATER TAX OF LUMBERTON.

LUMBERTON, N. C., October 29, 1908.

DR. R. H. LEWIS,

Raleigh, N. C.

DEAR SIR:—Your several letters addressed to the mayor and sheriff, relative to the amount of taxes due by the town on account of examination of water supplies, have been referred to me as town attorney for reply. I beg to say that I do not think the statute of 1905, as amended by the Acts of 1907, applies to the town of Lumberton. The water supply of the town is owned by the municipal government, but it is not used for *drinking* purposes. The water is pumped from the river into the tank and is used exclusively for fire protection and bathing purposes. No person here thinks of drinking the town water. I do not presume that there is a person in Lumberton, either white or colored, who would think of drinking the water furnished by the town. It seems that the Acts of 1905 and 1907 contemplate the analysis only of drinking-waters. I can see no use of any examination of water which is used simply for fire and bathing purposes. It has been for this reason that the samples of this water have not been sent to your department heretofore. I will be glad if you will refer this letter to the attorney of your Board and let me know what he thinks about it. The town has no desire whatever to do anything except what is right in the premises, but at the same time you can very readily see that under the circumstances it seems to us that it is a hardship to require us to pay the amount of these taxes.

Yours very truly,

R. C. LAURENCE.

RALEIGH, N. C., November 2, 1908.

HON. HAYDEN CLEMENT,

Assistant Attorney-General,

Raleigh, N. C.

MY DEAR SIR:—As the legal representative of the State, I refer to you a letter just received from Mr. R. C. Laurence for an opinion as to whether the town of Lumberton should not pay the water tax imposed by chapter 884, Laws of 1907, a copy of which I enclose for your convenience.

The act says: "Each and every water company, municipal, corporate or private, selling water to the people," shall pay this tax.

There is, of course, something in Mr. Laurence's contention, as to the difference it makes whether people drink the water or not; but it must not be forgotten that disease may be contracted from an infected water supply that is used for bathing purposes and for the kitchen, as, for example, in washing raw vegetables.

While the main object, of course, of the statute was to protect the people from water-borne diseases, at the same time the tax is for the support of the Laboratory, not only for this purpose, but for other health interests.

Of course, I know nothing of the law, but it seems to me that Lumberton ought to pay the tax. It is the only town in North Carolina, large or small, having a water supply, that does not, though it did for a while in the beginning.

An early opinion will oblige,

Yours very truly,

RICHARD H. LEWIS, M. D.,

Secretary.

RALEIGH, N. C., December 17, 1908.

DR. R. H. LEWIS,

Secretary State Board of Health,

Raleigh, N. C.

DEAR SIR:—I have your favor requesting an opinion as to whether the town of Lumberton should not pay the water tax imposed by chapter 884, Public Laws of 1907. The act says: "Each and every water company, municipal, corporate or private, selling water to the people," shall pay this tax.

I have carefully examined the letter of Mr. R. C. Laurence, and admit that there is something in his contention that there is a difference where the people drink the water, but the statute does not make it a decided distinction, but imposes a tax on all persons selling water to the people; in addition to this, it must not be forgotten that disease may be contracted from an infected water supply, when used for kitchen and bath purposes, as, for example, washing raw vegetables, lettuce, and the like.

My opinion is, therefore, that while the intention of the statute is to prevent water-borne diseases, at the same time the tax is for the Laboratory, and not only for this, but for the health of the people. I think the town of Lumberton should be made to pay the tax, although it is not for drinking purposes.

Very truly yours,

HAYDEN CLEMENT,

Assistant Attorney-General.

ENFORCEMENT OF LAW AGAINST NUISANCES.

RALEIGH, N. C., September 25, 1907.

HON. HAYDEN CLEMENT,

*Assistant Attorney-General,
Raleigh, N. C.*

MY DEAR SIR:—In order to save you the trouble of looking it up, I enclose a copy of an act relating to the Board of Health, as amended by the Legislature of 1901, and would be glad to have some advice as to the proper method of carrying out section 21.

While a fee of one dollar a day for failure to abate a nuisance, after its declaration by the County Superintendent of Health, has been imposed, nothing has been said about the method of collecting the said fine. I would appreciate very much your opinion as to the proper method of procedure. Who should institute the suit, in what court, and who should bear the expense of the same?

Thanking you in advance for a reply, I am,

Yours very truly,

RICHARD H. LEWIS, M. D.,
Secretary.

RALEIGH, N. C., September 27, 1907.

DR. RICHARD H. LEWIS,

*Secretary State Board of Health,
Raleigh, N. C.*

DEAR SIR:—Replying to your favor requesting a construction of section 21, chapter 214, Laws of 1893, I beg to state that the action should be brought in the name of the State, after giving twenty-four hours' written notice, and if the action is brought within fifty days after the notification of the nuisance, the same should be brought in a magistrate's court, or if it is within the municipal limits of a town or city, in either a magistrate's or a mayor's court. If, however, you delay bringing the action until after the penalties have accumulated to over fifty dollars fine, it should be brought in the Superior Court.

The penalty, of course, carries with it the cost, to be paid by the defendant to the prosecuting officer, who turns it over to the county treasurer.

Very truly yours,

HAYDEN CLEMENT,
Assistant Attorney-General.

LEGISLATION BY THE GENERAL ASSEMBLY OF 1907.

AN ACT TO AMEND SECTION 3057 OF THE REVISAL OF 1905, IN RELATION TO THE STATE LABORATORY OF HYGIENE.

SECTION 1. That section 3057 of the Revisal of 1905 be amended by striking out in line eighteen the words "twelve hundred dollars" and inserting in lieu thereof the words "two thousand dollars annually," and by inserting after the words "sixty," in line nineteen, the word "four."

[The effect of the above is to add two thousand dollars from the general treasury to the *annual* income of the laboratory, heretofore derived solely from the sixty-dollar tax on water companies. The \$1,200 stricken out was a single and not a continuing appropriation. The four dollars were added to cover expressage on samples, as some of the companies refused to pay it. The income of the laboratory now, while not large, will, we think, be sufficient to enable it to adequately fulfill its mission.]

AN ACT TO AMEND SECTION 3052 OF THE REVISAL OF 1905, IN RELATION TO WATER SUPPLIES.

SECTION 1. That section 3052 of the Revisal of 1905 be amended by striking out all after the word "maintain," in line five, and inserting in lieu thereof the following: "A system for collecting and disposing of all accumulations of human excrement within their respective jurisdictions, or control, at least once each week, by burning, by burial, or by some other method approved by the State Board of Health."

[The original act to protect water supplies required the removal of human excrement from the watershed, which was impracticable and unnecessary.]

AN ACT TO AMEND SECTION 3056 OF THE REVISAL OF 1905, IN RELATION TO WATER SUPPLIES.

SECTION 1. That section 3056 of the Revisal of 1905 be amended by adding at the end thereof the following: "And if at the end of ninety days more, or four months from the time of the first service of said notice of dangerous conditions and demand for their removal, the said removal has not been accomplished, the firm, individual or corporation selling water to the public shall be guilty of a misdemeanor, and shall

upon conviction thereof be fined in the sum of five hundred dollars; and a continuance of the said conditions dangerous to the public health for thirty days thereafter shall constitute a new offense and be punishable by a fine of the same amount: *Provided*, that the time limit above set may be extended by a committee of three members of the State Board of Health, of which committee the secretary and the engineer shall be two, to such extent as the facts and conditions in the case may in their judgment warrant."

AN ACT AUTHORIZING THE STATE BOARD OF HEALTH TO PROVIDE FOR THE PREVENTIVE TREATMENT OF HYDROPHOBIA.

SECTION 1. That the State Board of Health is hereby authorized and empowered to provide for and have conducted under its direction the preventive treatment of hydrophobia or rabies, whenever in its judgment circumstances, financial and other, will justify it. To meet the expenses of this treatment the said board is hereby given authority to supplement the revenue derived from fees for the treatment by such sums from the treasury of the State Laboratory of Hygiene as may be necessary: *Provided*, that the usefulness and efficiency of the said laboratory is not thereby impaired.

SEC. 2. That the benefits of said treatment shall be given free of charge to all residents of the State who shall present to the Secretary of the State Board of Health, or its representative having in charge the management of this special work, an affidavit of inability to pay, duly sworn to and subscribed before a justice of the peace, or, if the case be a minor, such an affidavit by the parent or guardian. To meet as far as may be the expenses of this special work, the said State Board of Health is hereby authorized and directed to demand from those able to do so the payment in advance of a reasonable fee, not to exceed in any case the usual charge made by the reputable Pasteur institutes of this country.

AN ACT TO ESTABLISH A SANATORIUM FOR THE TREATMENT OF TUBERCULOSIS.

SECTION 1. That there shall be appropriated the sum of fifteen thousand dollars from the general funds in the State Treasury for the establishment of a sanatorium for the treatment of persons afflicted with tuberculosis.

SEC. 2. That the control of the said sanatorium shall be vested in a board of directors composed of twelve members, to be elected by the General Assembly of North Carolina.

SEC. 3. That the said board of directors shall be appointed in four classes of three directors each: the first class to serve for a period of two years; the second class for a period of four years; the third class for a period of six years, and the fourth class for a period of eight years. The following members shall constitute the first board of directors, to wit: First class, I. E. Green, Y. T. Ormond and W. H. Whitehead, who shall serve for a period of two years from the date of their election and until their successors are elected and qualified; second class, to be composed of John D. Dawes, W. E. Breese and Walter Murphy, who shall serve for a period of four years from the date of their election and until their successors are duly elected and qualified; the third class shall be composed of N. A. McLean, M. Eugene Street and Dr. J. R. Gordon, who shall serve for a period of six years from the date of their election and until their successors are duly elected and qualified; the fourth class shall be composed of Dr. J. E. Brooks, J. Reese Blair and L. S. Blades, who shall serve for a period of eight years from the date of their election and until their successors are duly elected and qualified. The Secretary of the North Carolina State Board of Health shall be *ex officio* a member of the board of directors.

SEC. 4. In case any vacancy or vacancies shall occur in either of the said classes by death or removal from the State of any member of the said board of directors as hereinbefore composed, or for any other reason, such vacancy or vacancies shall be filled by the board, the person or persons thus chosen to serve until the next succeeding session of the General Assembly of North Carolina, when a successor or successors shall be elected by the General Assembly to fill out the unexpired term of the class or classes in which said vacancy or vacancies occur.

SEC. 5. That said board of directors shall be and are hereby constituted a body politic and corporate, under the name and style of "North Carolina Sanatorium for the Treatment of Tuberculosis," and upon them, as such, are hereby conferred all the duties, powers, privileges and obligations incident to bodies corporate.

SEC. 6. That said board of directors are hereby given full power and authority to meet and organize themselves, from their own numbers to elect a chairman, to purchase sites, to erect buildings and to provide such apparatus and equipment as may be necessary to establish such a sanatorium and prepare it for the reception of patients: *Provided*, such expenditures do not exceed the amount appropriated by section one of this act; with power in the board to elect a superintendent, fix his compensation, and do every other act or thing reasonably necessary and incident to carrying out the provisions of this act.

SEC. 7. The board of directors shall prescribe the duties of the superintendent, who shall be a skilled physician of good character and

good business habits and otherwise qualified to discharge the duties of his office. He shall hold office for a period of two years from and after the date of his election, unless sooner removed therefrom by the board for incompetency or misconduct in office, and shall keep a record of his transactions and duly enter the same in a book or books for the purpose.

SEC. 8. That said superintendent shall employ such subordinate officers and employees of said sanatorium as may be necessary and fix their compensation, subject to the approval of the board, and said superintendent shall have the power to discharge the same for incompetency or misconduct in office, and the proceedings in regard to such shall be reported to the said board of directors.

SEC. 9. The superintendent shall make monthly reports to the chairman of the board of directors, clearly setting forth the conditions and workings of the institution, and upon the receipt of such report said chairman shall have authority to convene said board, if in his discretion it is necessary to do so. Said superintendent shall make a detailed report of the conditions and workings of the institution every three (3) months to the board of directors, and he shall also make a detailed report to the Governor and the General Assembly. The directors shall be required to hold meetings of their board every three (3) months, or oftener, if the chairman of said board shall call them together, and said board shall be required to make annual reports of the conditions and workings of the hospital herein provided for to the Governor and General Assembly.

SEC. 10. The board of directors shall at their first meeting select from their number an executive committee, composed of the chairman of said board and two of their members, who, in the absence of the board of directors, shall have the direction of the affairs of the said hospital.

SEC. 11. The board of directors shall make all such by-laws and regulations for the government of the hospital as shall be necessary, among which shall be such as shall make the said sanatorium as nearly self-supporting as shall be consistent with the purpose of its creation.

SEC. 12. The Treasurer of the State of North Carolina shall be the treasurer of the said corporation. The said treasurer shall keep all accounts of the said sanatorium and pay out all moneys, upon a warrant of the superintendent of said sanatorium, countersigned by two members of the board of directors, under such rules and regulations as said board may establish.

SEC. 13. For the purpose of maintaining and defraying the running expenses of said sanatorium there shall be appropriated annually the sum of five thousand dollars (\$5,000) from the general funds of the State Treasury in addition to the appropriation provided for in section one of this act, which shall be deposited with the treasurer of the corporation and shall be subject to the orders of the said board.

SEC. 14. Said board of directors shall be empowered to receive or accept gifts or donations for the benefit of the said sanatorium, and said board shall, in their discretion, use the same for carrying out the purposes for which the said sanatorium is established.

SEC. 15. Each member of the board of directors shall be entitled to receive as compensation the sum of two dollars (\$2) per day while exclusively engaged in conducting the affairs of the said sanatorium, in addition to his necessary traveling expenses and hotel bills.

AN ACT PROVIDING FOR THE SEPARATION OF PRISONERS SUFFERING WITH TUBERCULOSIS FROM OTHER PRISONERS.

SECTION 1. That the board of county commissioners of the respective counties of North Carolina shall provide in the jail-house or in any camp or place where prisoners are committed for keeping or sentenced to a term of imprisonment in any county in the State of North Carolina, separate cells or rooms or a place in which shall be confined any prisoner or prisoners who may be committed for keeping or sentenced to said prison or place of confinement for a term of imprisonment, who has been examined by the county superintendent of health and pronounced by the said county superintendent of health as being affected with tuberculosis.

SEC. 2. That it shall be the duty of any sheriff of any county when a prisoner is placed in his custody for the purpose of being committed to jail or any place of confinement mentioned in this act, who said sheriff has been informed or has any reason to believe or suspect is suffering with tuberculosis, to have any such prisoner examined by the county superintendent of health, and if said prisoner shall be pronounced by said county superintendent of health as a tuberculous prisoner, then said prisoner shall be separated from the other prisoners and confined in a separate cell or place provided for by this act.

SEC. 3. That it shall be the duty of the Board of Directors of the State's Prison to provide separate cells or apartments in the said State's Prison in which shall be kept any prisoner or prisoners who may be sentenced to that institution for a term of imprisonment, who after being examined and pronounced by the physician in charge as being affected with tuberculosis.

SEC. 4. That the cells and places of confinement provided for in this act for prisoners affected with tuberculosis shall be kept exclusively for said tuberculous prisoners, and under no circumstances or conditions shall any other prisoner be committed or sentenced to the institutions and places of imprisonment mentioned in this act, who is well and not affected with tuberculosis, be confined in the cells or places of confinement therein provided for tuberculous prisoners: *Provided fur-*

ther. that when said cells or places of confinement provided for in this act, either in the county jail or camps or the State's Prison, have been used and occupied by any prisoners affected with tuberculosis, the said cells or places of confinement shall not be used for any other prisoners until the county superintendent of health or the physician in charge and health authorities of the State's Prison have been notified, and the said cells or places of confinement have been thoroughly fumigated and disinfected under the supervision of the said county superintendent of health or the physician in charge and the health authorities of said State's Prison, in the manner prescribed and required by the State Board of Health.

SEC. 5. Whenever any prisoner or prisoners shall be committed to any of the prisons or places of confinement designated in this act, it shall be the duty of the sheriff of the county or the warden of the State's Prison, as the case may be, in the event any such prisoner or prisoners be known or suspected by said authorities to be suffering with tuberculosis, to have any such prisoner or prisoners examined by the county superintendent of health or the physician in charge within five days after they have been committed or sentenced to said prison.

SEC. 6. That nothing contained in this act shall be construed as to interfere with or prevent the county or State authorities from working together all prisoners on public works as now provided for by law.

SEC. 7. That any person or persons violating any of the terms or provisions of this act shall be guilty of a misdemeanor and upon conviction shall be punished in the discretion of the court.

SEC. 8. This act shall be in force from and after August first, one thousand nine hundred and seven.

In the General Assembly read three times, and ratified this the 4th day of March, A. D. 1907.

AN ACT REQUIRING RAILROAD COMPANIES TO KEEP THEIR PASSENGER-CARS AND TOILET-ROOMS CLEAN AND DECENT.

SECTION 1. That every person or railroad company, whether incorporated or not, engaging in the regular business of carrying passengers on its railroad cars in this State, shall have the passenger-cars on their roads cleaned, brushed and dusted and the windows washed, if needed, at least once each day, and have in each car, in which male and female passengers are carried therein, a toilet-room for each sex, and have the same kept clean.

SEC. 2. Any person or corporation engaged in the business described in section one of this act, who shall willfully or negligently fail or refuse to give orders to their agent or agents in charge of such cars

and comply with the requirements of this act shall forfeit twenty dollars (\$20) for each day that it refuses, to be recovered by any person suing for said penalty.

SEC. 3. That the willful or negligent refusal or the failure on the part of the conductor or manager of any such passenger-car as named in section one to comply with said section one shall be received as evidence of such failure or refusal of such person or railroad company to give such orders, and, moreover, such conductor or manager shall be guilty of a misdemeanor if he fails or refuses to carry out said orders of the person or company mentioned in section one of this act.

SEC. 4. That this act shall take effect from and after the first day of May, one thousand nine hundred and seven.

AN ACT TO AMEND SECTION 4498 OF THE REVISAL OF 1905,
BY ADDING A SUBSECTION MARKED (A) THERETO FOR
ENLARGING THE POWERS OF THE BOARD OF MEDICAL
EXAMINERS IN GRANTING A LICENSE TO APPLICANTS TO
PRACTICE MEDICINE.

SECTION 1. That section four thousand four hundred and ninety-eight of the Revisal of one thousand nine hundred and five be amended by adding a subsection marked (a) "That the Board of Medical Examiners shall in their discretion issue a license to any applicant to practice medicine and surgery in this State without examination, if said applicant exhibits a diploma or satisfactory proof of graduating from a medical college in good standing, requiring an attendance of not less than three years and a license issued to him to practice medicine and surgery by the Board of Medical Examiners of another State."

[The saving feature in the above is that it is left to the discretion of the Board of Examiners as to what States they shall reciprocate with. We can trust them to see to it that our standard is not lowered.]

SMALLPOX.

In the biennial period covered by this report the number of cases of smallpox reported was: White, 1,788; colored, 2,191; total, 3,979. The number of deaths: White, 8; colored, 6; total, 14.

In the preceding two years the number of cases was: White, 6,441; colored, 6,985; total, 13,426; and the number of deaths: White, 14; colored, 29; total, 43.

From the above figures it appears that the disease is becoming decidedly less prevalent, the number of cases being less than one-third that of the two years before, and the number of deaths also a trifle less than one-third that of the same period.

COMPULSORY VACCINATION—DECISION OF THE SUPREME COURT.

Without the power to order and enforce compulsory vaccination it would be impossible to secure the vaccination of all the people—the only really effective preventive of smallpox. We are very glad, therefore, to chronicle another decision by our Supreme Court sustaining the right of the proper authorities to initiate and carry out such regulations. A decision of similar effect was *State v. Hay*, from Alamance, in 1900. We take much pleasure in giving below the able opinion of Justice Hoke. We are specially glad that Superintendent of Health Stewart was sustained, for he showed an earnest devotion to duty that deserves the highest praise:

MORGAN v. STEWART.

(Supreme Court of North Carolina, April 24, 1907.)

Mulicious Prosecution—Want of Probable Cause—Criminal Prosecution.

Revisal 1905, sec. 4451, provides that on the appearance of smallpox in a neighborhood, the sanitary committee of any county can make such regulations for the vaccination of its inhabitants and

impose such penalties as they may deem necessary to protect the public health. Section 3455 provides that if any person shall violate any of the regulations of the sanitary authorities of any county as to vaccination he shall be guilty of a misdemeanor. Smallpox having become prevalent in a county, and an epidemic being threatened, the sanitary committee passed a resolution that any person within a radius of three miles of any schoolhouse who willfully refused to be vaccinated or to allow any one in his charge to be vaccinated should be guilty of a misdemeanor, and the county superintendent of health was directed to enforce compulsory vaccination as necessary. Smallpox having developed within three miles of the plaintiff's schoolhouse, the county superintendent requested that he be allowed to vaccinate plaintiff and his scholars, which request was refused, and the county superintendent instituted a prosecution against plaintiff which resulted in his acquittal: *Held*, in an action for malicious prosecution by plaintiff against the county superintendent, that there was probable cause for the prosecution of plaintiff by the county superintendent.

Appeal from Superior Court, Anson County. *Justice, Judge.*

Action by C. H. Morgan against Henry D. Stewart. From a judgment for plaintiff, defendant appeals. Reversed.

There was evidence to the effect that in February, 1906, the present defendant, who was at that time superintendent of health for Union County, had caused the arrest and trial before two justices of the peace of said county of the present plaintiff, who was then teaching a public school in Union, on a charge of wrongfully refusing to be vaccinated and to permit the vaccination of the pupils of his school, pursuant to regulations of the sanitary committee of that county. That on trial, had on March 10, 1906, the present plaintiff was acquitted, and thereupon instituted the action against defendant for malicious prosecution. At the close of the plaintiff's testimony, and again at the close of the entire testimony, there was motion on the part of the defendant to dismiss the action as on judgment of nonsuit, in that there was no testimony to sustain or justify a finding for the plaintiff on the issue as to want of probable cause for the prosecution complained of. The motion was denied, and defendant excepted. Verdict and judgment for plaintiff, and defendant excepted and appealed.

R. B. Redwine for appellant.

HOKE, J. It is accepted doctrine with us that on facts admitted and established the question of probable cause is one of law for the Court. *Jones v. Railroad*, 125 N. C., 229, 34 S. E., 398; *Bradley v. Morris*, 44 N. C., 395; *Swain v. Stafford*, 26 N. C., 392. And it is further held that the acquittal by a court which has jurisdiction to try and determine the question does not make out a *prima facie*

case of want of probable cause. *Bell v. Pearce*, 33 N. C., 233. Applying these principles, a careful examination of the record leads us to the conclusion that in no aspect of the testimony has the plaintiff made out his allegation of a want of probable cause for the prosecution, and there was error in refusing the defendant's motion to nonsuit.

There is no substantial divergence in the testimony presented, and it tends to show that for eighteen months prior to the occurrence smallpox had been prevalent in Union County, there having been as many as 572 cases in the year previous and 200 cases already developed in the current year; that one case existed one-half mile from the schoolhouse in question and several others at a distance not much greater, and that at Waxhaw, within three miles, there were quite a number of cases. In the presence of these conditions, the sanitary committee of Union County met at Monroe, N. C., and, having been called to order by the chairman, passed a resolution looking to compulsory vaccination, as follows: "Any person or persons within a radius of three miles of any schoolhouse who willfully refuses to be vaccinated or to allow any one in his charge to be vaccinated shall be guilty of a misdemeanor." The committee, having fixed a fee for vaccination, allowed the superintendent of health to call in any doctor of the county to help him; and it was further ordered that the county superintendent of health proceed to enforce compulsory vaccination to such an extent as he might consider necessary. The substance of these proceedings was duly published in the county paper, and the plaintiff testified that he had been made aware of some such proceedings, but was not informed of their precise nature. The defendant, who was then superintendent of health in Union County, having heard that there were several cases of smallpox near the plaintiff's school, one within a half mile, and in sight, calls at the schoolhouse, explains the conditions and the law, as he understands it, and requests that he be allowed to vaccinate the plaintiff and his scholars, and the request is refused. The plaintiff and defendant differ somewhat as to the precise terms; but, taking either version to be true, there was a refusal both as to the plaintiff and the scholars, or certainly as to some of them. Having referred the matter to the Secretary of the State Medical Board at Raleigh, and having been advised that the teacher was indictable and should be proceeded against, and, furthermore, having been shown a letter from the Attorney-General of the State to the Superintendent of Public Instruction, in which the Attorney-General advised that regulations similar to those of Union County could be lawfully enforced, the superintendent instituted the prosecution complained of and on which the present plaintiff was tried and acquitted.

Our statute law provides, in substance (Rev. 1905, sec. 4451), that on the appearance of smallpox in a neighborhood the authorities of

any city or town or the sanitary committee of any county may make such regulations and provisions for the vaccination of its inhabitants, and impose such fines, as they may deem necessary to protect the public health. And section 3455 provides that "if any person shall violate any of the rules and regulations of the sanitary authorities of any county in regard to vaccination he shall be guilty of a misdemeanor, and fined, not exceeding fifty dollars, or imprisoned, not exceeding thirty days." We find no precise form in which the resolutions of the county sanitary board should be couched, nor any specified or stated order of proceedings where such matters are to be considered or determined, and we see no reason why the order of the sanitary committee should not be upheld as a valid exercise of the authority conferred upon them by the statute. They could not declare the prohibited act a misdemeanor, because its status had already been so fixed by public law, but their resolution could still be received and construed as a regulation requiring parties within the prescribed territory to submit to vaccination; and the statute makes the refusal a misdemeanor within the jurisdiction of the justice of the peace. Legislation of this character has been upheld by well-considered decisions in this and other jurisdictions. *Hutchins v. Durham*, 137 N. C., 68, 49 S. E., 46; *State v. Hay*, 126 N. C., 999, 35 S. E., 459, 49 L. R. A., 588, 78 Am. St. Rep., 691; *Morris v. Columbus*, 102 Ga., 792, 30 S. E., 850, 42 L. R. A., 175, 66 Am. St. Rep., 243. And it is also well established that the Legislature can confer on local boards, certainly those clothed with governmental functions, the power to make reasonable regulations to protect the public health and to fix and establish facts or conditions on which a statute makes its own action depend. *State v. Railroad*, 141 N. C., 852, 54 S. E., 294, 8 Cyc., 830; Freund on Police Power, sec. 34. And while the local regulations are required to be reasonable, and are, to some extent, subject to judicial control, both as to the existence of an apprehended danger and the reasonableness of the relief (Freund on Police Powers, *supra*), we have held that "where a statute of this kind has been passed and the conditions established which call it into operation, it thus becomes a law binding on each and all alike, and it is optional to no one's private judgment whether to render compliance or not. If there are exceptional cases, where, owing to the peculiar state of the health or system, vaccination would be dangerous, that would be a matter of defense the burden of which would be on the defendant." *State v. Hay*, *supra*. In holding that there was probable cause for prosecuting the plaintiff, we intend to make no comment, certainly no adverse comment, either on the justices who tried and acquitted the plaintiff or on the plaintiff himself. Both, no doubt, acted according to their best judgment and sense of duty, and there is much to be said in justification of the plaintiff's conduct. But the plaintiff's conduct here is not the impor-

tant or controlling question. We are considering chiefly the conduct of the defendant and how the matter reasonably appeared to him. He was at that time superintendent of health of Union County, whose sworn duty it was to see that laws addressed to the subject involved were enforced, and to carry out, as far as possible, the work as directed by the sanitary committee of his county and by the State Board of Health. Revisal 1905, sec. 4451. He notes that the county is threatened with an epidemic of smallpox, and the sanitary board has passed a resolution requesting each and every one within a radius of three miles of any case of smallpox to be vaccinated, and on the statute books is a law which makes it a misdemeanor to refuse to comply with this regulation; that this school is within such a radius and is in great danger of exposure, and under such conditions he applies to the plaintiff for permission to vaccinate both plaintiff and his scholars, and the application is refused.

There is also evidence tending to show that there was a disposition in many localities to obstruct the enforcement of these regulations, and, under such circumstances, the defendant consults with the Secretary of the State Board of Health as to the proper course to be pursued. That officer, who deservedly holds the confidence of every well-informed and patriotic citizen of the State by reason of his faithful and intelligent devotion to his duties and to the State's best interest, advises, upon all the facts, that the law has been broken, and that the public good requires that the prosecution should be instituted. The defendant then swears out the warrant and causes the plaintiff to be put on trial. Probable cause, in cases of this kind, has been properly defined as the existence of such facts and circumstances, known to him at the time, as would induce a reasonable man to commence a prosecution. *Cabiness v. Martin*, 14 N. C., 454; *Bell v. Pearcey*, *supra*.

It seems clear to us that in no aspect of the testimony, as the same is presented in this record, has there been a want of probable cause shown, and the Court below should have decided the case as on judgment of nonsuit.

Reversed.

VITAL STATISTICS.

For lack of a general law compelling the collection of vital statistics by a proper and uniform method, our mortuary statistics—limited as they are to a comparatively few cities and towns—are not in every instance as accurate as they should be. Comparing them with those of previous years, the various causes of death are quite uniform; so that if there are errors they seem to be more or less constant.

We append the tables.

TABLE I—SHOWING THE COMPARATIVE PREVALENCE OF CERTAIN DISEASES IN THE THREE PHYSICAL DIVISIONS OF THE STATE DURING 1907 and 1908.

Eastern Division (E)—Alluvial Plain. Central Division (C)—Hilly. Western Division (W)—Mountainous. The figures under the various diseases represent in percentage the proportion of the counties reporting the presence of the disease in question to the whole number of counties sending reports for the month.

Month.	Physical Division.	Year.	Whole Number Counties.	Number Counties Reporting.	Diphtheria.	Diarrhoeal Diseases.	Influenza.	Malarial Fever.	Malarial Fever, Pernicious.	Malarial Fever, Hemorrhagic.	Pneumonia.	Scarlatina.	Typhoid Fever.	Smallpox.
January.	E.	1907	36	25	16.0	0.0	48.0	12.0	4.0	8.9	80.0	4.0	32.0	24.0
		1908		28	25.0	0.0	57.2	3.6	3.6	0.0	82.1	10.7	32.1	28.7
	C.	1907	27	21	28.6	0.0	42.8	4.8	0.0	4.8	71.4	14.3	28.6	61.9
		1908		20	25.0	0.0	50.0	0.0	0.0	5.0	80.0	30.0	45.0	30.0
	W.	1907	34	28	21.4	0.0	25.0	0.0	0.0	0.0	46.4	32.1	39.3	14.3
		1908		30	20.0	0.0	36.7	0.0	0.0	0.0	86.7	36.7	36.7	30.0
February.	E.	1907	36	27	22.2	0.0	44.4	14.8	0.0	7.4	70.3	3.7	33.3	25.9
		1908		26	15.4	0.0	59.0	0.0	0.0	0.0	84.6	0.0	19.2	34.6
	C.	1907	27	21	9.5	0.0	61.9	0.0	0.0	0.0	71.4	0.0	23.8	42.8
		1908		28	21.7	0.0	43.5	0.0	0.0	0.0	87.0	39.1	21.7	30.4
	W.	1907	34	28	10.7	0.0	60.7	0.0	3.6	0.0	60.7	21.4	25.0	10.7
		1908		27	14.8	0.0	44.4	0.0	0.0	0.0	88.9	7.4	25.9	33.3
March.	E.	1907	36	26	23.1	0.0	50.0	7.7	3.8	7.7	67.3	3.8	15.4	46.2
		1908		26	19.2	0.0	34.6	3.8	3.8	0.0	84.6	0.0	11.5	26.9
	C.	1907	27	24	12.5	0.0	29.2	0.0	0.0	0.0	75.0	8.3	29.2	58.2
		1908		28	19.0	0.0	19.0	0.0	0.0	0.0	57.1	23.8	23.8	23.8
	W.	1907	34	28	28.7	0.0	50.0	0.0	0.0	0.0	78.6	14.3	28.7	17.8
		1908		31	3.2	0.0	25.8	0.0	0.0	0.0	71.0	19.3	12.9	35.5
April.	E.	1907	36	31	22.6	6.4	12.9	25.8	6.4	6.4	58.1	0.0	29.0	12.9
		1908		29	17.2	6.9	6.9	20.7	6.9	0.0	58.6	0.0	20.7	17.2
	C.	1907	27	22	18.2	0.0	13.7	9.1	4.5	0.0	59.1	9.1	40.9	63.6
		1908		28	13.2	9.1	0.0	0.0	0.0	0.0	45.4	9.1	40.9	22.7
	W.	1907	34	26	11.5	11.5	30.8	0.0	0.0	0.0	61.5	7.7	26.9	15.4
		1908		32	9.4	0.0	3.1	0.0	0.0	0.0	53.1	21.9	31.2	21.9
May.	E.	1907	36	24	4.2	25.0	4.2	8.3	4.2	0.0	45.8	0.0	25.0	29.2
		1908		29	13.8	0.0	20.7	13.8	3.4	3.4	34.5	10.3	62.1	6.9
	C.	1907	27	20	10.0	20.0	5.0	20.0	5.0	0.0	50.0	15.0	50.0	45.0
		1908		28	12.5	0.0	37.5	4.2	0.0	0.0	25.0	16.7	62.1	16.7
	W.	1907	34	29	10.3	31.0	6.9	0.0	0.0	0.0	48.3	6.9	44.8	20.7
		1908		28	10.7	0.0	21.4	3.6	0.0	0.0	42.8	21.4	46.4	7.1
June.	E.	1907	34	29	6.9	10.3	0.0	27.6	3.4	0.0	13.8	3.4	65.5	10.3
		1908		28	21.4	14.3	3.6	21.4	7.1	0.0	14.3	10.7	82.1	3.6
	C.	1907	27	22	18.2	4.5	0.0	22.7	13.2	0.0	27.3	13.2	95.4	31.7
		1908		28	8.7	8.7	0.0	21.7	4.3	0.0	39.1	17.4	73.9	13.0
	W.	1907	34	27	14.8	22.2	0.0	3.7	0.0	0.0	55.5	18.5	81.5	14.8
		1908		29	17.2	27.6	0.0	0.0	0.0	0.0	31.0	6.9	75.9	0.0

TABLE I—CONTINUED.

Month.	Physical Division.	Year.	Whole Number Counties.	Number Counties Reporting.	Diphtheria.	Diarrheal Diseases.	Influenza.	Malarial Fever.	Malarial Fever, Pernicious.	Malarial Fever, Hemorrhagic.	Pneumonia.	Scarlatina.	Typhoid Fever.	Smallpox.
July.	E.	1907 1908	36 28	27 28	11.1 42.8	14.8 3.6	0.0 3.6	40.7 35.7	7.4 7.1	11.1 10.7	11.1 25.0	0.0 10.7	81.5 82.1	14.8 10.7
	C.	1907 1908	27 28	21 20	38.1 60.0	4.8 5.0	0.0 0.0	38.1 20.0	4.8 10.0	4.8 5.0	19.0 20.0	14.3 25.0	80.9 100.0	33.3 0.0
	W.	1907 1908	34 28	31 28	19.3 32.1	9.7 7.1	0.0 0.0	3.2 7.1	0.0 3.6	0.0 0.0	19.3 28.7	19.3 28.7	90.3 82.1	19.3 3.6
August.	E.	1907 1908	36 30	31 30	19.3 56.7	0.0 6.7	0.0 0.0	38.7 40.0	9.7 10.0	3.2 3.3	19.3 16.7	3.2 16.7	80.6 70.0	19.3 6.7
	C.	1907 1908	27 28	22 23	22.7 69.6	4.5 0.0	0.0 0.0	27.3 30.4	4.5 8.7	0.0 0.0	13.2 30.4	22.7 52.2	100.0 95.6	22.7 8.7
	W.	1907 1908	34 31	32 31	40.6 16.1	9.4 12.9	0.0 0.0	15.6 25.8	6.2 6.4	0.0 0.0	25.0 25.8	40.6 35.5	93.7 90.3	15.6 6.4
September.	E.	1907 1908	36 26	30 26	50.0 57.7	3.3 3.8	0.0 3.8	53.3 42.3	10.0 19.2	6.7 19.2	20.0 19.2	0.0 3.8	76.7 65.4	3.3 7.7
	C.	1907 1908	27 28	22 22	54.5 63.6	0.0 4.5	0.0 0.0	27.3 13.2	4.5 0.0	4.5 0.0	31.8 31.8	31.8 36.4	81.8 86.4	22.7 0.0
	W.	1907 1908	34 28	30 28	53.3 35.7	6.7 0.0	0.0 0.0	3.3 10.7	0.0 3.6	0.0 0.0	26.7 21.4	50.0 57.1	90.0 82.1	10.0 3.6
October.	E.	1907 1908	36 28	30 28	60.0 78.2	6.7 3.6	10.0 0.0	33.3 39.3	10.0 10.7	13.3 21.4	36.7 25.0	3.3 10.7	66.7 67.8	10.0 7.1
	C.	1907 1908	27 28	23 22	56.5 81.8	0.0 0.0	0.0 0.0	26.1 9.1	4.3 4.5	0.0 0.0	43.5 36.4	34.8 50.0	86.9 90.9	13.0 4.5
	W.	1907 1908	34 29	30 29	50.0 51.7	0.0 0.0	6.7 0.0	3.3 6.9	0.0 3.4	0.0 0.0	56.7 38.9	60.0 55.2	83.3 62.1	13.3 0.0
November.	E.	1907 1908	36 28	29 28	48.3 46.4	0.0 0.0	6.9 3.6	17.2 32.1	3.4 7.1	6.9 21.4	68.3 35.7	3.4 32.1	48.3 60.7	6.9 10.7
	C.	1907 1908	27 28	21 21	42.8 66.7	0.0 0.0	14.3 0.0	4.8 0.0	0.0 0.0	0.0 0.0	57.1 57.1	38.1 52.4	66.7 66.7	23.8 4.8
	W.	1907 1908	34 30	34 30	38.2 40.0	0.0 0.0	5.9 0.0	0.0 3.3	0.0 3.3	0.0 0.0	70.6 60.0	47.1 50.0	70.6 53.3	5.9 3.3
December.	E.	1907 1908	36 31	27 31	29.6 45.2	0.0 0.0	14.8 6.4	3.7 9.7	0.0 3.2	0.0 9.7	77.8 54.5	3.7 6.4	40.7 32.2	18.5 16.1
	C.	1907 1908	27 28	20 22	25.0 54.5	0.0 0.0	15.0 9.1	0.0 9.1	0.0 0.0	0.0 4.5	90.0 68.2	20.0 54.5	60.0 68.2	30.0 0.0
	W.	1907 1908	34 31	30 31	40.0 25.8	0.0 0.0	26.7 9.7	0.0 0.0	0.0 0.0	0.0 0.0	86.7 61.3	33.3 32.2	50.0 41.9	16.7 6.4
Average for the Year.	1907	E. C. W.	36 27 34	28.2 21.6 29.4	26.1 28.0 28.2	5.5 2.8 7.5	15.9 15.2 17.7	23.6 14.2 2.4	5.3 3.7 0.5	5.3 1.2 0.0	46.4 50.7 53.1	2.4 16.8 29.3	49.6 62.0 60.3	18.4 37.4 13.2
	1908	E. C. W.	36 28 34	28.2 21.9 29.5	34.0 41.4 23.1	3.2 2.3 4.0	15.9 13.3 10.8	21.9 9.0 4.8	6.8 2.3 1.7	8.0 0.8 0.0	44.6 48.1 51.4	9.3 33.9 30.9	50.5 64.6 53.4	14.7 13.0 12.6

Disease.		Number of Counties that Mention the Presence of each Disease each Month.											
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of counties that sent in reports (97 counties in the State) -----	{ 1907 1908	75 75	76 76	79 79	80 81	73 80	79 80	80 86	84 84	82 74	82 80	85 79	77 83
Diarrhœal diseases -----	{ 1907 1908	---	---	---	---	10 3	8 21	4 14	4 6	4 2	2 1	---	---
Diphtheria -----	{ 1907 1908	16 19	11 18	17 10	14 11	6 10	10 13	17 33	24 38	42 39	46 55	37 39	25 34
Distemper (horses) -----	{ 1907 1908	---	3 ---	2 ---	1 ---	1 ---	---	---	1 ---	---	---	1 ---	---
Influenza -----	{ 1907 1908	28 37	43 35	33 21	15 3	4 1	---	---	1 ---	---	5 1	7 7	15 ---
Malarial fever -----	{ 1907 1908	4 1	3 1	2 1	2 6	10 6	6 11	14 21	23 16	24 27	17 15	6 10	1 5
Malarial fever, hemorrhagic -----	{ 1907 1908	3 ---	2 ---	2 ---	2 1	2 ---	---	4 4	1 1	3 5	4 6	2 6	---
Malarial fever, pernicious -----	{ 1907 1908	1 1	---	1 1	3 2	2 1	4 1	3 5	6 7	4 6	4 5	1 3	---
Measles -----	{ 1907 1908	34 32	33 35	50 47	49 39	43 31	33 23	24 11	19 7	13 5	13 11	16 8	17 15
Mumps -----	{ 1907 1908	2 3	2 2	1 3	1 2	1 1	1 1	---	---	1 ---	1 ---	1 2	3 2
Meningitis, cerebro-spinal -----	{ 1907 1908	2 6	4 2	3 6	5 3	6 4	8 9	6 6	5 1	8 5	5 6	1 5	1 2
Pneumonia -----	{ 1907 1908	48 65	52 66	54 55	47 44	35 28	25 21	13 19	17 20	21 18	38 26	50 40	65 53
Rabies (dogs) -----	{ 1907 1908	---	---	---	1 1	---	1 1	1 1	---	1 1	1 ---	1 ---	---
Rotheln -----	{ 1907 1908	---	1 1	---	---	---	---	---	---	---	---	---	2
Scarlatina -----	{ 1907 1908	13 20	7 11	7 11	4 9	5 13	9 9	6 16	19 28	22 25	27 30	25 35	16 24
Smallpox -----	{ 1907 1908	23 23	19 25	31 23	22 17	22 8	14 4	17 4	16 6	9 3	10 6	10 5	16 7
Staggers (horses) -----	{ 1907 1908	---	---	---	---	---	---	1 ---	1 ---	1 ---	---	---	---
Typhoid fever -----	{ 1907 1908	18 29	21 17	19 12	25 25	29 46	62 62	72 66	79 70	68 59	65 57	52 47	39 38
Varicella -----	{ 1907 1908	---	---	2 1	1 1	---	---	---	---	---	---	1 1	---
Whooping-cough -----	{ 1907 1908	21 26	22 28	26 34	29 35	33 30	29 34	27 30	23 31	20 16	17 24	24 21	27 29
Cholera (chicken) -----	{ 1907 1908	---	1 ---	---	---	1 1	1 ---	1 ---	---	---	1 ---	---	---
Cholera (hog) -----	{ 1907 1908	2 ---	1 ---	2 1	1 ---	---	2 ---	2 ---	2 2	1 1	2 1	2 1	3 2

TABLE III—TABLE OF MORTALITY REPORTS FOR YEAR ENDING DECEMBER 31, 1907.

Towns and Reporters.	Races.	Deaths by Months, 1907.												Death Rate (Annual) Per 1,000, by Months.												Rate for Year.		
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	By Races.	By Towns.	Population.												
Asheville A. G. Halyburton, Esq., City Clerk.	W.	27	28	26	12	14	22	16	21	13	15	26	20	240	382	21	6.22	4.26	8.	16,810	4.12	20.8	16.0	16.0	17.4	15,000		
	C.	8	21	9	10	10	13	8	13	12	12	13	14	143	382	13	7.36	9.15	4.	22,320	6.20	22.3	24.0	20.4	17.4	7,000		
Charlotte Dr. F. O. Hawley.	W.	13	19	14	20	26	31	37	19	20	16	15	19	249	457	8	7.12	7.93	13.	12,733	3.10	10.7	12.7	13.8	15.2	18,000		
	C.	15	22	11	18	27	13	15	25	17	14	14	17	208	457	17	5.22	6.11	0.	25,017	0.14	11.0	17.0	17.3	15.2	12,000		
Durham Dr. N. M. Johnson. Dr. T. A. Mann.	W.	18	15	11	10	22	15	17	14	22	18	13	19	191	403	23	0.15	0.13	2.	12,026	4.18	20.4	13.0	19.0	16.2	12,000		
	C.	7	21	20	17	23	15	16	23	12	20	15	17	269	403	14	0.48	0.30	0.	25,535	5.24	40.0	30.9	31.0	34.8	6,000		
Elizabeth City Dr. H. D. Walker. Dr. C. B. Williams.	W.	7	10	7	6	6	11	8	8	6	7	3	3	82	210	14	0.20	0.14	0.	12,012	0.22	16.6	6.0	6.0	13.7	6,000		
	C.	9	20	16	15	7	10	14	12	5	7	8	5	128	210	27	0.60	0.48	0.	36,021	0.36	12.0	21.0	15.0	32.0	4,000		
Fayetteville Dr. A. S. Rose.	W.	5	3	11	9	2	4	1	10	6	9	4	2	66	118	17	1.10	3.37	31.	6,813	7.34	3.4	13.7	6.8	18.8	3,500		
	C.	3	5	6	3	8	1	6	2	7	4	2	5	52	118	14	4.24	0.28	8.	4,828	8.19	2.9	21.0	20.8	19.7	2,500		
Goldsboro Robt. A. Creech, Esq., City Clerk.	W.	5	4	4	4	7	5	5	2	3	7	4	2	52	138	10	0.8	0.8	0.	10,410	0.10	10.0	4.0	4.0	8.7	6,000		
	C.	10	6	9	4	11	12	8	7	5	9	3	2	86	138	30	0.18	0.27	0.	12,033	0.36	0.24	9.0	6.0	21.5	4,000		
Greensboro Dr. Edmund Harrison.	W.	7	13	9	9	20	10	10	4	2	8	8	9	119	280	8	4.15	6.10	8.	10,821	0.12	12.0	16.8	11.1	19.1	10,000		
	C.	8	9	25	9	15	21	13	14	11	13	14	9	161	280	19	2.21	6.60	21.	28,022	0.26	26.0	28.0	26.8	17.5	6,000		
High Point Dr. C. E. Reitzel.	W.	9	9	10	16	14	14	14	14	10	6	3	128	180	14	4.14	4.14	4.	14,120	8.18	3.18	8.0	3.1	13.9	9,200			
	C.	3	7	8	3	3	4	1	10	7	3	3	3	52	180	18	9.44	2.31	6.	18,018	0.24	6.0	18.0	26.0	16.1	2,000		
Marion Dr. B. L. Ashworth. Dr. M. L. Justice.	W.	1	2	1	0	3	0	2	1	2	1	2	2	17	20	8	0.17	1.8	0.	6,025	7.0	17.1	16.0	11.3	12.5	1,500		
	C.	0	0	1	0	0	0	1	0	1	0	1	0	3	20	0	0	0	0	0,012	0.0	0.0	0.0	30.0	0.0	100		
Oxford Dr. S. D. Booth.	W.	4	1	3	1	2	3	1	4	4	0	1	0	24	43	32	0.7	0.21	2.	5,412	0.18	6.0	24.0	24.0	0.0	6.0		
	C.	1	0	2	3	4	2	1	1	1	1	2	2	20	43	8	0.01	0.16	0.	20,021	0.12	6.0	6.0	10.0	11.0	2,000		

TABLE III—CONTINUED.

Towns and Reporters.	Races.	Deaths by Months, 1907.												Grand Total.	Death Rate (Annual) Per 1,000, by Months.												Rate for Year.			Population.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		By Races.	By Towns.														
Raleigh T. P. Sale, Esq., Clerk Board of Health.	W.	820	14	15	22	11	20	23	19	19	23	22	216	435	10,726	718.7	20,029	314.7	20.0	21.2	17.5	17.5	21.2	20.3	16.6	13,000	22,000			
	C.	19	8	17	18	11	20	25	19	20	21	18	23	219	32.6	13.7	29.1	30.9	18.9	337.5	28.5	26.7	28.0	24.2	30.7	21.3	9,000			
Reidsville J. F. Smith, Esq., Clerk Board of Health.	W.	6	4	6	2	8	5	2	5	5	4	1	4	52	95	18.0	12.0	18.0	6.0	24.0	15.0	6.0	15.0	15.0	5.0	12.0	13.0	4,000	6,000	
	C.	4	5	2	3	3	3	5	6	1	2	4	5	43	24.0	30.0	12.0	18.0	18.0	30.0	36.0	6.0	12.0	24.0	30.0	21.5	2,000			
Salem S. E. Putner, Supt. of Health. Mayor F. H. Vogler.	W.	5	3	3	1	3	4	5	1	3	1	7	4	40	52	17.7	10.6	10.6	3.2	10.6	14.1	17.6	3.5	10.6	3.5	24.7	14.1	11.8	3,400	3,800
	C.	1	0	1	1	3	0	1	1	0	0	3	12	12	30.0	0.0	30.0	30.0	90.0	0.0	30.0	30.0	30.0	0.0	0.0	90.0	30.0	400		
Salisbury Dr. H. T. Trantham.	W.	410	8	3	3	8	5	2	7	10	6	5	71	136	6,516	213.0	4.8	4.9	13.0	8.1	3.2	11.3	16.1	9.7	5.4	9.6	7,400	11,000		
	C.	2	6	4	7	6	5	6	5	6	4	8	65		6.7	20.0	13.3	23.3	20.0	16.7	20.0	16.7	20.0	13.3	26.7	18.0	3,600			
Southport Dr. J. A. Doshier.	W.	2	1	1	0	1	0	1	0	1	3	0	10	19	26.7	13.3	13.3	0.0	13.3	0.0	0.0	13.3	0.0	13.3	40.0	0.0	11.1	900	1,400	
	C.	0	1	0	1	0	1	0	0	3	1	1	9		0.0	24.0	0.0	24.0	0.0	24.0	0.0	0.0	0.0	21.0	21.0	18.0	500			
Tarboro Dr. S. N. Harrell. Dr. W. J. Thigpen.	W.	2	3	2	3	4	4	2	0	2	2	0	7	31	63	9.6	14.4	9.6	14.4	19.2	9.6	0.0	16.0	16.0	0.0	56.0	20.7	1,500	3,000	
	C.	1	4	1	4	0	1	2	8	2	6	1	32		12.0	48.0	12.0	48.0	0.0	12.0	24.0	95.0	16.0	48.0	8.0	16.0	21.3	1,500		
Weldon Mayor J. T. Gooch.	W.	0	2	2	1	0	2	1	0	2	1	2	16	29	0.0	32.0	32.0	32.0	16.0	0.0	32.0	0.0	32.0	16.0	32.0	21.3	750	1,500		
	C.	1	0	0	4	2	1	1	0	0	1	1	13		16.0	0.0	0.0	64.0	32.0	16.0	16.0	0.0	0.0	16.0	32.0	17.3	750			
Wilmington Dr. Charles T. Harper.	W.	15	12	22	19	26	23	12	12	15	20	21	220	570	13.1	9.0	16.5	14.2	14.2	217.2	17.2	9.0	9.0	11.2	15.0	15.7	13.7	19.0	16,000	30,000
	C.	36	30	24	25	32	30	32	20	26	28	37	330		30.8	25.7	20.5	21.4	21.4	25.7	27.4	17.1	22.3	24.0	31.7	25.7	25.0	14,000		
Wilson Dr. W. S. Anderson.	W.	2	4	4	4	5	4	6	3	4	6	6	54	146	6.3	12.6	12.6	12.6	15.8	12.6	18.9	9.5	12.6	18.9	18.9	14.2	3,800	6,800		
	C.	10	6	5	4	5	7	10	11	13	7	6	92		40.0	24.0	20.0	16.0	20.0	28.0	40.0	44.0	52.0	28.0	24.0	32.0	30.7	3,000		

TABLE IV—TABLE OF MORTALITY REPORTS FOR YEAR ENDING DECEMBER 31, 1908.

Towns and Reporters.	Deaths by Months, 1908.												Death Rate (Annual) Per 1,000, by Months.												Rate for Year.		Population.											
	Races.												Total by Races.												By Races.												By Towns.	
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	By Races.	By Towns.											
Asheville	W. 20	23	16	14	19	18	25	27	10	16	17	19	224	319	16.0	27.6	7.4	11.2	15.2	14.4	20.0	21.6	8.0	12.8	13.6	15.2	14.9	15,000	22,000									
A. G. Haliburton, Esq., City Clerk.	C. 15	13	9	14	8	15	14	5	12	4	4	12	125	25.7	31.2	21.6	24.0	13.7	25.7	24.0	8.6	20.6	5.1	6.8	20.6	17.9	15.9	7,000	22,000									
Charlotte	W. 10	21	20	14	21	20	21	10	23	33	12	18	223	468	6.7	14.0	13.3	8.3	14.0	13.3	14.0	6.7	15.3	22.0	8.0	12.0	12.4	18,000	30,000									
Dr. F. O. Hawley.	C. 19	27	20	23	18	14	25	18	23	26	17	15	245	19.0	27.0	20.0	23.0	18.0	14.0	25.0	18.0	23.0	26.0	17.0	15.0	20.4	15.6	12,000	30,000									
Durham	W. 12	25	10	10	24	22	16	16	19	13	8	13	188	388	12.6	25.0	10.0	10.0	24.0	22.0	16.0	16.0	19.0	13.0	8.0	12.0	11.4	13,000	20,000									
Dr. T. A. Mann.	C. 20	19	20	12	26	22	17	14	17	10	16	7	200	40.0	38.0	40.0	24.0	52.0	41.0	31.0	24.0	34.0	20.0	32.0	12.0	28.6	19.4	7,000	20,000									
Elizabeth City	W. 10	5	7	3	4	2	9	5	6	7	2	4	64	165	20.0	10.0	14.0	6.0	8.0	4.0	18.0	10.0	12.0	11.0	4.0	8.0	10.7	16.5	6,000	10,000								
Dr. C. B. Williams.	C. 14	9	8	9	8	11	11	12	6	4	5	4	101	42.0	27.0	23.0	27.0	24.0	33.0	33.0	36.0	18.0	12.0	15.0	12.0	25.2	16.5	4,000	10,000									
Fayetteville	W. 4	4	3	3	3	2	1	3	3	3	1	1	31	107	13.7	13.7	10.3	10.3	10.3	6.8	3.4	10.3	7.2	10.3	3.4	3.4	8.8	3,500	6,000									
Dr. A. S. Rose.	C. 4	4	6	8	19	4	3	3	7	2	8	8	76	19.2	19.2	28.8	38.4	91.2	19.2	14.4	14.4	24.0	9.6	38.4	38.4	30.4	17.9	2,500	6,000									
Goldsboro	W. 5	2	5	5	11	7	1	2	0	3	1	4	46	108	10.0	4.0	10.0	10.0	22.0	14.0	2.0	40.0	0.0	6.0	2.0	8.0	7.7	6,000	10,000									
Robt. A. Creech, Esq., City Clerk.	C. 6	4	7	4	5	7	8	4	6	3	2	62	108	18.0	12.0	21.0	12.0	15.0	21.0	24.0	12.0	18.0	18.0	9.0	6.0	15.5	10.8	4,000	10,000									
Greensboro	W. 16	13	11	4	15	12	9	12	6	10	10	6	124	253	19.2	15.6	13.2	4.8	18.0	14.4	10.8	14.4	7.2	12.0	12.0	7.2	12.4	15.8	10,000	16,000								
Dr. Edmund Harrison.	C. 8	17	12	6	13	10	9	13	13	9	8	11	129	16.0	34.0	24.0	12.0	26.0	20.0	18.0	26.0	26.0	18.0	16.0	8.2	21.5	14.4	6,000	16,000									
Marion	W. 5	0	1	2	0	2	0	3	0	2	0	2	17	23	40.0	0.0	8.0	16.0	0.0	16.0	0.0	2.4	0.0	16.0	0.0	16.0	11.2	1,500	1,650									
Dr. M. L. Justice.	C. 0	0	1	1	0	0	0	3	0	0	0	0	26	0.0	0.0	120.0	120.0	0.0	0.0	0.0	0.0	360.0	0.0	0.0	0.0	60.0	14.4	100	1,500	1,650								
New Bern	W. 4	2	6	2	5	7	4	7	4	4	5	6	56	216	7.4	3.7	11.0	3.7	9.2	12.9	7.4	12.9	6.4	6.4	8.0	9.6	7.5	14.4	7,500	15,000								
Dr. Charles Duffy.	C. 14	20	18	4	13	18	12	15	12	15	11	8	160	22.4	32.0	28.8	6.4	20.8	28.9	19.2	24.0	19.2	24.0	17.6	12.8	21.3	14.4	7,500	15,000									
Oxford	W. 0	0	0	1	2	3	3	1	2	2	2	2	18	41	0.0	0.0	0.0	6.0	12.0	18.0	18.0	6.0	12.0	12.0	12.0	12.0	9.0	10.2	2,000	4,000								
Dr. S. D. Booth.	C. 2	1	0	1	4	2	3	3	1	1	1	4	23	12.0	6.0	0.0	6.0	24.0	12.0	6.0	18.0	6.0	6.0	6.0	24.0	6.0	11.5	10.2	2,000	4,000								

TABLE IV—CONTINUED.

Towns and Reporters.	Deaths by Months, 1908.												Death Rate (Annual) Per 1,000, by Months.				Rate for Population Year.													
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	By Towns.	By Races.	By Towns.	By Races.	By Towns.	By Races.												
Raleigh T. P. Sale, Esq., Clerk Bd. Health	W. 19	26	18	20	15	26	21	18	14	26	26	15	238	419	17.5	24.0	16.6	18.5	13.8	18.5	19.4	15.4	14.0	15.1	22.3	12.8	17.0	11,000	25,000	
	C. 18	18	20	13	23	25	14	12	14	17	21	211			21.0	24.0	26.7	17.3	32.0	39.7	31.2	15.3	11.4	15.3	18.5	13.1	19.2	11,000	25,000	
Reidsville J. F. Smith, Esq., City Clerk.	W. 5	10	3	0	0	3	3	4	4	2	2	7	41	78	15.0	30.0	9.0	0.0	9.0	9.0	12.0	12.0	9.0	6.0	21.0	11.0	13.0	4,000	6,000	
	C. 5	3	1	5	1	3	5	3	3	2	0	34			30.0	18.0	6.0	39.0	6.0	18.0	30.0	30.0	18.0	12.0	0.0	6.0	17.0	2,000	6,000	
Salem Mayor F. H. Vogler.	W. 7	1	6	2	1	6	2	5	4	2	1	1	38	45	21.7	3.2	21.2	8.0	3.5	24.6	7.0	20.0	16.0	8.0	4.0	4.0	12.7	13.2	3,000	3,400
	C. 0	0	0	1	0	1	0	4	0	1	0	7			22.1	0.0	0.0	0.0	39.0	0.0	30.0	0.0	129.0	0.0	30.0	0.0	17.5	2.400	3,400	
Salsbury Dr. H. T. Trantham.	W. 5	6	6	5	5	9	3	8	6	14	6	10	82	170	8.1	9.7	9.7	8.1	8.1	14.6	4.9	13.0	9.7	22.7	9.3	16.2	11.2	15.4	7,400	11,000
	C. 8	8	9	5	7	5	8	5	14	5	9	4	87		26.7	26.7	39.0	16.7	23.3	16.7	29.4	16.7	46.7	16.7	30.0	13.3	21.2	3,600	11,000	
Southport Dr. J. A. Dosher.	W. 0	0	1	1	1	1	2	0	1	2	4	14	18	62	0.0	0.0	12.0	12.0	12.0	12.0	24.0	0.0	12.0	12.0	24.0	48.0	114.0	13.7	1,000	1,600
	C. 1	4	0	1	0	1	0	1	0	0	0	8			21.0	80.0	0.0	21.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	13.3	600	1,600	
Tarboro Dr. W. J. Thigpen.	W. 1	1	2	1	2	3	2	3	2	1	2	2	25	62	32.0	8.0	16.0	8.0	16.0	24.0	16.0	16.0	24.0	16.0	8.0	16.0	16.7	20.7	1,500	3,000
	C. 2	1	3	3	5	8	2	5	3	1	2	37			16.0	8.0	24.0	24.0	40.0	61.0	16.0	40.0	24.0	8.0	16.0	16.0	21.7	1,500	3,000	
Weldon Mayor J. T. Gooch.	W. 1	1	1	0	0	1	1	2	1	2	1	0	11	41	16.0	16.0	16.0	0.0	0.0	16.0	16.0	32.0	16.0	32.0	16.0	0.0	14.7	27.3	750	1,500
	C. 2	3	2	3	2	6	2	1	3	2	1	5	30		32.0	32.0	48.0	32.0	96.0	32.0	16.0	48.0	32.0	16.0	16.0	80.0	40.0	27.3	750	1,500
Wilmington Dr. Charles T. Harper.	W. 18	24	20	13	25	22	14	26	14	15	13	22	224	560	13.5	18.0	15.0	9.7	17.2	16.5	10.5	19.5	10.5	11.5	9.7	16.5	14.0	18.7	16,000	30,000
	C. 25	34	29	30	32	27	35	30	25	19	23	336			23.0	29.1	24.8	25.7	27.4	23.1	30.0	25.7	21.4	16.3	19.7	23.1	24.0	11,000	30,000	
Wilson Dr. W. S. Anderson.	W. 2	4	5	1	6	7	3	4	8	5	6	4	55	127	6.3	12.6	15.8	3.1	19.0	22.1	9.5	12.6	25.3	15.8	18.9	12.6	14.4	18.7	3,800	6,800
	C. 11	6	2	4	3	6	9	9	10	4	5	3	72		41.0	21.0	8.0	16.0	12.0	21.0	36.0	36.0	40.0	16.0	30.0	12.0	21.0	18.7	3,800	6,800

TABLE V—SHOWING CAUSES OF DEATH FOR THE YEAR ENDING DECEMBER 31, 1907.

Towns.	Races.	Population.		Annual Death Rate per 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	Total Deaths.		Deaths under 5 years.	Still-born.	
		By Races.	Total.	By Races.	Total.																					
Asheville	W. C.	15,000	22,000	16.0	17.4	9	1	0	1	1	1	19	90	5	3	1	5	13	10	0	0	240	383	36	11	
		7,000	20.4	20.4	17.4	9	0	0	0	2	1	19	85	0	3	1	5	13	9	0	0	143	441	41	12	
Charlotte	W. C.	18,000	30,000	13.8	15.2	16	1	4	4	5	4	21	15	3	15	3	13	13	7	1	1	249	457	87	40	
		12,000	17.3	17.3	15.2	16	0	3	4	4	0	15	22	1	8	3	13	13	7	0	0	208	60	60	32	
Durham	W. C.	12,000	18,000	16.2	22.4	17	0	0	4	4	1	16	26	16	6	6	22	32	7	1	1	191	403	58	8	
		6,000	34.8	34.8	22.4	17	0	2	4	4	1	20	41	7	7	0	22	90	3	0	1	209	77	20	20	
Elizabeth City	W. C.	6,000	10,000	13.7	21.0	1	0	0	1	1	1	6	5	11	4	5	12	31	2	1	0	82	210	31	3	
		4,000	32.0	32.0	21.0	1	0	2	0	0	2	8	16	7	9	3	15	59	4	0	0	128	50	15	15	
Fayetteville	W. C.	3,500	6,000	18.8	19.7	4	0	0	0	0	0	9	2	9	7	2	16	12	1	0	0	66	118	21	2	
		2,500	20.8	20.8	19.7	4	0	0	0	0	0	5	11	5	7	0	7	13	1	0	0	52	11	4	4	
Goldsboro	W. C.	6,000	10,000	8.7	13.8	3	0	1	1	0	0	4	4	7	5	0	11	12	0	1	3	52	138	13	3	
		4,000	21.5	21.5	13.8	3	0	1	1	2	0	5	11	3	10	0	2	41	3	0	1	86	34	12	12	
Greensboro	W. C.	10,000	16,000	11.9	17.5	6	1	0	0	1	0	9	19	9	9	1	14	45	4	1	0	119	280	31	6	
		6,000	26.8	26.8	17.5	6	0	0	0	1	0	17	32	7	14	0	18	59	4	0	2	161	47	19	19	
High Point	W. C.	9,200	11,200	13.9	16.1	12	1	0	0	0	1	7	7	13	8	3	15	51	4	1	0	128	180	48	16	
		2,000	26.0	26.0	16.1	12	0	0	0	0	3	5	7	2	7	0	4	20	1	0	2	152	17	3	3	
Marion	W. C.	1,500	1,600	11.3	12.5	2	0	0	0	0	1	2	1	0	3	1	1	5	1	0	0	17	26	2	0	
		100	30.0	30.0	12.5	2	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	3	3	0	0	
Oxford	W. C.	2,000	4,000	12.0	11.0	2	0	0	0	1	1	4	0	1	2	0	4	6	3	0	0	0	21	44	7	3
		2,000	10.0	10.0	11.0	2	0	1	0	2	0	1	1	4	3	0	3	3	0	0	0	20	5	5	5	

TABLE V—CONTINUED.

Towns.	Population.		Annual Death Rate per 1,000.		Races.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	By Races.	Total.	By Races.	Total.	Typhoid Fever.				Scarlet Fever.		Malarial Fever.		Diphtheria.		Whooping-cough.		Measles.		Pneumonia.		Consumption.		Brain Diseases.		Heart Diseases.		Neurotic Diseases.		Diarrhoeal Diseases.		All Other Diseases.		Accident.		Suicide.		Violence.		By Races.		Total Deaths.		Deaths under 5 years.		Still-born.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
					W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.

TABLE VI—SHOWING CAUSES OF DEATH FOR THE YEAR ENDING DECEMBER 31, 1908.

Towns.	Population.		Annual Death Rate Per 1,000.	Races.																	Total Deaths.			
	By Races.	Total.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	By Races.	By Towns.	Deaths under 5 years.	Still-born.	
Asheville	W. C.	15,000 7,000	22,000	14.9 17.9	15.9	1 5	1 0	0 0	0 0	0 0	21 14	79 27	18 11	11 9	0 0	11 16	71 40	9 3	1 0	0 0	224 125	349 32	35 25	3 5
Charlotte	W. C.	18,000 12,000	30,000	12.4 20.4	15.6	5 2	0 13	1 0	0 0	12 4	37 9	18 11	5 8	28 13	112 95	4 6	0 0	0 0	0 0	223 245	468 38	82 69	26 38	
Durham	W. C.	13,000 7,000	20,000	14.4 28.6	19.4	8 2	1 0	1 1	7 2	3 9	44 17	32 55	10 9	2 16	15 23	71 56	6 0	0 0	0 0	188 200	388 388	49 70	14 15	
Elizabeth City	W. C.	6,000 4,000	10,000	10.7 25.2	16.5	6 2	0 1	0 0	1 3	0 10	4 18	5 8	6 9	1 0	4 18	26 29	0 2	0 1	0 0	64 101	165 42	20 13	4 13	
Fayetteville	W. C.	3,500 2,500	6,000	8.8 30.4	17.9	2 0	0 0	0 0	0 0	4 4	3 14	5 4	0 3	6 4	5 8	0 4	0 0	0 0	1 0	31 76	107 25	3 6	1 4	
Goldsboro	W. C.	6,000 4,000	10,000	7.7 15.5	10.8	0 6	0 0	0 0	0 3	0 6	3 8	4 3	5 3	1 0	12 10	17 20	0 1	0 0	0 0	46 62	108 30	12 6	4 6	
Greensboro	W. C.	10,000 6,000	16,000	12.4 21.5	15.8	7 4	0 2	0 0	0 2	0 17	12 46	11 13	6 2	2 4	16 25	55 4	2 0	0 0	0 0	124 123	253 43	43 21	16 21	
Marion	W. C.	1,500 100	1,600	11.3 60.0	14.4	3 0	0 0	0 0	0 0	2 0	0 1	0 0	3 1	0 0	0 5	1 4	0 0	0 0	2 6	17 6	23 1	0 0	0 0	
New Bern	W. C.	7,500 7,500	15,000	7.5 21.3	14.4	1 0	0 3	0 0	0 0	10 35	4 23	2 19	6 2	0 9	18 52	3 3	0 0	0 0	1 0	56 160	216 48	24 19	4 19	
Oxford	W. C.	2,000 2,000	4,000	9.0 11.5	10.2	1 1	0 0	0 0	0 0	0 3	2 2	4 5	3 6	0 0	4 4	0 0	0 0	0 0	0 0	18 41	3 4	3 0	3 0	

TABLE VI—CONTINUED.

Towns.	Population.		Annual Death Rate Per 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	Total Deaths.		Deaths under 5 years.	Still-born.
	By Races.	Total.	By Races.	Total.																	By Races.	By Towns.		
Raleigh	W. C.	14,000 11,000	17.0 19.2	18.0	7 2	0 0	0 4	0 0	0 0	0 0	13 20	21 46	21 4	15 12	0 0	15 8	142 96	1 2	1 0	2 6	238 211	449	50 55	11 19
Reidsville	W. C.	4,000 2,000	11.0 17.0	13.0	2 0	0 0	0 0	0 0	0 0	1 0	10 6	6 3	3 1	3 2	2 2	1 4	15 10	1 0	0 0	0 0	44 34	78	1 2	3 3
Salem	W. C.	3,000 400	12.7 17.5	13.2	1 0	0 0	0 0	1 0	0 0	1 0	7 0	5 3	0 0	6 0	0 0	0 0	17 4	0 0	0 0	0 0	38 7	45	1 0	2 1
Salisbury	W. C.	7,400 3,600	11.2 24.2	15.4	6 6	2 0	1 1	0 0	2 1	0 16	14 7	7 5	8 1	2 5	0 1	18 5	14 28	2 2	1 0	0 1	83 87	170	0 0	0 0
Southport	W. C.	1,000 600	14.0 13.3	13.7	1 0	0 0	1 0	0 0	1 0	1 0	0 3	2 2	2 1	4 0	1 0	0 1	4 28	0 0	0 0	0 0	14 8	22	2 3	0 0
Tarboro	W. C.	1,500 1,500	16.7 21.7	20.7	1 0	0 0	0 0	0 0	1 0	0 0	2 1	1 5	1 0	1 6	1 0	5 3	11 22	1 0	0 0	0 0	25 37	62	19 13	2 2
Weldon	W. C.	750 750	14.7 40.6	27.3	0 0	0 0	0 0	0 0	1 0	0 0	1 4	0 0	0 0	0 0	0 0	2 4	6 15	2 0	0 0	0 0	11 30	41	6 10	1 1
Wilmington	W. C.	16,000 14,000	14.0 24.0	18.7	9 6	0 0	2 8	1 0	0 1	0 2	14 25	19 44	6 5	19 34	17 29	26 53	104 114	6 12	1 1	0 2	224 336	560	76 116	14 71
Wilson	W. C.	3,800 3,000	14.4 24.0	18.7	5 0	2 0	1 7	0 0	0 0	0 0	4 6	2 5	5 3	4 2	1 0	6 5	22 44	2 0	0 0	1 0	56 72	127	22 42	3 0
Total, 19 towns	W. C.	133,950 88,950	12.9 21.9	16.5	62 47	6 0	10 42	17 5	7 21	4 2	144 232	225 360	140 95	127 163	33 48	176 190	719 684	42 46	4 2	7 12	1723 3672	439	111 605	11 230
Grand total		222,900			109	6	52	22	28	6	376	586	235	290	81	366	1403	88	6	19	3672			

REPORT OF TREASURER.

Richard H. Lewis, Treasurer, in account with the North Carolina Board of Health, January 1, 1907, to December 31, 1908.

DISBURSEMENTS.

1907.		
Jan.	5. W. H. Brewer, repairing typewriter.....	\$ 1.00
	31. News and Observer Publishing Company, 1 copy Year-Book	2.00
Feb.	2. Salary of Secretary and Treasurer for January..	\$3.33
	6. Miss Mabel P. Massey, stenographer, January salary	35.00
	14. W. D. Dinkins, shelving for office.....	5.00
	15. H. B. Taylor, painting and varnishing bookcases in office	5.00
	19. Gertrude Austin, work in arranging office.....	1.75
	W. G. Briggs, Postmaster, stamps.....	50.00
Mch.	1. Southern Express Company, expressage on health pamphlets90
	2. Salary of Secretary and Treasurer for February,	\$3.33
	7. Miss Mabel Massey, stenographer, February salary,	35.00
	8. Dobbin & Ferrall, art square for office.....	13.50
	Office rent, January 5th to February 10th.....	15.00
	11. W. G. Briggs, Postmaster, stamps.....	10.00
	12. J. B. Lippincott, 1 copy of "Consumption and Civilization"	3.00
	Baker-Thompson Lumber Company, material for shelving office	4.29
	14. B. R. Rickards, subscription American Journal of Public Hygiene	1.00
	28. Carolina Hardware Company, stove and fixtures,	21.00
April	1. A. Williams & Co., sundries for office, as per voucher attached	6.25
	Powell & Powell, coal for office.....	10.25
	Salary of Secretary and Treasurer for March....	\$3.33
	Lewis & Battle, office rent and janitor, March....	10.00
	Miss Mabel P. Massey, stenographer, March salary,	35.00
	2. Royal & Borden Furniture Company, 1 filing cabinet	2.30
	16. E. M. Uzzeil & Co., 500 postal cards.....	5.00
May	1. R. L. Green, hanging shades in office.....	.50
	Miss Mabel P. Massey, stenographer, April salary,	35.00
	Salary of Secretary and Treasurer for April....	\$3.33
	W. G. Briggs, Postmaster, deposit for postage on Bulletin	5.00

May	10.	Charities and The Commons, subscription.....	\$ 2.00
		Baptist Book Store, office supplies.....	6.40
		Thos. H. Briggs & Sons, office supplies.....	2.70
June	8.	Salary of Secretary and Treasurer for May.....	83.33
		Miss Mabel Massey, stenographer, May salary.....	35.00
		Raleigh Construction Company, repairing electric light in office	1.10
		Richard H. Lewis, expenses as delegate to Tubercu- losis Association, \$29.70; National Conference State and Provincial Boards of Health, \$26.50; annual meeting at Morehead, \$15.70.....	71.00
		W. G. Briggs, Postmaster, stamps.....	50.00
		S. H. Wiley, typewriter ribbon.....	1.00
		Dr. J. Howell Way, per diem and expenses annual meeting at Morehead	56.15
		Dr. Geo. M. Sternberger, annual dues National Association for Study and Prevention of Tubercu- losis	5.00
July	2.	Miss Mabel Massey, stenographer, June salary....	35.00
		Dr. Edw. C. Register, per diem and expenses annual meeting at Morehead	42.70
		Col. J. L. Ludlow, per diem and expenses annual meeting at Morehead	32.50
		Drs. Lewis & Battle & Tucker, office rent, second quarter	30.00
		Salary of Secretary and Treasurer for June.....	83.33
		Dr. H. M. Bracken, Secretary and Treasurer, dues State and Provincial Boards of Health.....	10.00
		Dr. Geo. G. Thomas, per diem and expenses annual meeting at Morehead	17.80
		Dr. T. E. Anderson, per diem and expenses annual meeting at Morehead	37.10
		Dr. W. O. Spencer, per diem and expenses annual meeting at Morehead	32.40
	9.	Royall & Borden Furniture Company, balance on exchange of file	2.30
	12.	J. D. Riggan & Co., 1 waste-basket.....	1.00
		Capital Typewriter Company, 2 Affo special filing cabinets and guide cards.....	41.29
	13.	Dr. T. A. Storey, Secretary and Treasurer, annual dues American School Hygiene Association.....	3.00
Aug.	1.	Richard H. Lewis, expenses trip to Morganton in re- gard to location of tuberculosis wards.....	10.30
		Dr. G. G. Thomas, expenses trip to Morganton in regard to location of tuberculosis wards.....	20.75
		Miss Mabel Massey, stenographer, July salary....	35.00
		Salary of Secretary and Treasurer for July.....	83.33

Aug.	1. Southern Express Company.....	\$.50
	5. Postal Cable and Telegraph Company, telegrams in July70
	W. G. Briggs, Postmaster, deposit to pay postage on Bulletin	5.00
	8. Alfred Williams & Co., in full of account to 1st inst., office supplies	4.45
	Capital City Telephone Company, message to Health Officer of Reidsville60
	27. American Surety Company, half premium on bond of Treasurer North Carolina Board of Health and State Laboratory of Hygiene.....	10.00
	28. Col. J. L. Ludlow, per diem and expenses inspection for cause of typhoid in Reidsville.....	15.75
	29. W. G. Briggs, Postmaster, stamps.....	50.00
	31. Salary of Secretary and Treasurer for August..	\$3.33
Sept.	10. Miss Mabel P. Massey, stenographer, August salary,	35.00
	25. Remington Typewriter Company, No. 7 typewriter, less 10 per cent discount allowed State officers..	90.00
	28. Stamps	50.00
Oct.	9. Richard H. Lewis, expenses A. P. H. A. meeting at Atlantic City	60.00
	Miss Mabel P. Massey, stenographer, September salary	35.00
	Salary of Secretary and Treasurer for September,	\$3.34
	Baptist Book Store, in full of account to date.....	.56
	25. Southern Express Company, charges on missing volumes of reports A. P. H. A.....	1.35
Nov.	2. Salary of Secretary and Treasurer for October..	\$3.34
	Miss Mabel P. Massey, stenographer, October salary	35.00
	5. Col. J. L. Ludlow, expenses as delegate A. P. H. A. meeting at Atlantic City.....	55.50
	14. W. G. Briggs, Postmaster, stamps.....	50.00
	30. G. E. Stechert & Co., British Journal of Tubercu- losis	1.25
Dec.	2. Salary of Secretary and Treasurer for November,	\$3.34
	Miss Mabel Massey, stenographer, November salary,	35.00
	Powell & Powell, 1 ton coal.....	8.50
	20. Miss Mabel Massey, stenographer, December salary,	35.00
	31. Salary of Secretary and Treasurer in December..	\$3.34
	Drs. Lewis & Battle & Tucker, rent third and fourth quarters	60.00
		<hr/>
		\$1,034.60

1908.

Jan.	2.	W. G. Briggs, Postmaster, deposit for postage on Bulletin	\$ 10.00
	7.	Alfred Williams & Co., ledger, cards, 6 files, etc....	1.75
	25.	Stamps	50.00
Feb.	1.	Salary of Secretary and Treasurer for January...	83.33
	4.	Miss Mabel Massey, stenographer, January salary, International Congress on Tuberculosis, dues.....	35.00
	11.	Baptist Book Store, typewriter paper and note-books	5.00
		T. E. Green, one typewriter ribbon.....	.50
Mch.	2.	Powell & Powell, 1 ton coal.....	9.00
		Miss Mabel Massey, stenographer, February salary, Salary of Secretary and Treasurer for February..	35.00
		83.33	
	12.	R. L. Green, window shades for office.....	3.50
April	4.	Salary of Secretary and Treasurer for March.....	83.33
		Drs. Lewis, Battle & Tucker, rent first quarter..	30.00
	13.	Miss Mabel Massey, stenographer, March salary..	25.00
May	11.	Miss Mabel Massey, stenographer, April salary....	25.00
		Baptist Book Store, office supplies, as per voucher, Thomas Whitaker, 1 copy "Traits of American Negroes"	3.10
		2.17	
	16.	Richard H. Lewis, expenses annual conference with Surgeon General	26.00
		Salary of Secretary and Treasurer for April.....	83.33
	28.	Stamps	15.00
	29.	W. G. Briggs, Postmaster, deposit for postage on Bulletin	5.00
June	5.	Richard H. Lewis, Secretary, salary for May....	83.33
	8.	Richard H. Lewis, cash items during fiscal year ending May 20, 1908.....	2.35
		Richard H. Lewis, cash items past 15 years.....	96.81
	10.	Miss Mabel P. Massey, stenographer, May salary,	25.00
	12.	Geo. M. Sternberg, Treasurer, annual dues National Association Study and Prevention of Tuberculosis, June, 1908, to June, 1909.....	5.00
	23.	Thomas E. Anderson, per diem and expenses annual meeting, Winston-Salem	28.70
		J. Howell Way, per diem and expenses annual meeting, Winston-Salem	39.90
		Charities Pub. Society, subscription Charities and The Commons to July, 1909.....	1.00
		Dr. Thomas A. Story, Secretary, dues for current year American School Hygiene Association....	3.00
July	1.	Edw. C. Register, per diem and expenses annual meeting, Winston-Salem	24.20

July	2.	Geo. G. Thomas, per diem and expenses annual meeting, Winston-Salem	\$ 15.50
		Miss Mabel P. Massey, stenographer, June salary,	25.00
	6.	Richard H. Lewis, per diem and expenses annual meeting at Winston-Salem	6.40
		Richard H. Lewis, Secretary and Treasurer, June salary	83.33
		Lewis, Battle & Tucker, office rent second quarter,	30.00
	23.	James A. Burroughs, per diem and expenses annual meeting, Winston-Salem	28.00
		Stamps, letters and literature to all doctors in State	50.00
	25.	Busbee & Busbee, agents and attorneys, half premium on bond No. 568902 in American Surety Company of New York.....	10.00
	31.	Richard H. Lewis, Secretary and Treasurer, July salary	83.33
		Miss Mabel P. Massey, stenographer, July salary,	25.00
	Aug. 1.	Southern Express Company, expressage in July...	.75
	4.	P. H. Andrews, deposit for postage on Bulletin...	5.00
	12.	Miss Mabel Massey, stenographer, August salary...	25.00
		Alfred Williams & Co., office supplies.....	2.20
	Sept. 12.	Richard H. Lewis, Secretary and Treasurer, August salary	83.33
Oct.	8.	Miss Mabel P. Massey, stenographer, September salary	25.00
		Richard H. Lewis, Secretary and Treasurer, September salary	83.34
	24.	Charities Pub. Society, 1 copy "Campaign Against Tuberculosis"	2.00
	27.	Thos. E. Anderson, per diem and expenses, inspection of State institutions at Raleigh.....	31.65
		Edw. C. Register, per diem and expenses, inspection State institutions at Raleigh.....	33.00
	Nov. 6.	Richard H. Lewis, Secretary and Treasurer, October salary	83.34
		H. M. Bracken, Secretary and Treasurer, dues Con. State and Provincial Boards of Health,	10.00
		Miss Mabel P. Massey, stenographer, October salary	25.00
	9.	Baptist Book Store, office supplies to 2d inst.....	2.00
		Powell & Powell, 1 ton of coal.....	8.50
	Dec. 1.	Southern Express Company, to date.....	3.35
	2.	Stamps	20.00
		Miss Mabel P. Massey, stenographer, November salary	25.00

Dec.	3.	Richard H. Lewis, Secretary and Treasurer, November salary	\$ 83.34
	4.	Thos. H. Briggs & Sons, 1 night-latch.....	2.00
	11.	James A. Burroughs, per diem and expenses, inspection of State institutions at Greensboro..	24.15
		W. O. Spencer, per diem and expenses, inspection of State institutions at Greensboro and convict camp at Elkin	26.10
	30.	George G. Thomas, per diem and expenses, inspection of State institutions at Morganton....	22.50
		J. Howell Way, per diem and expenses, inspection of orphan asylums at Oxford.....	41.25
	31.	Richard H. Lewis, Secretary and Treasurer, December salary	83.34
		Lewis, Battle & Tucker, office rent, third and fourth quarters	60.00
		Miss Mabel P. Massey, stenographer, December salary	25.00
		Richard H. Lewis, expenses inspecting State institutions at Morganton	17.50
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		Balance on hand	\$ 90.75
		Receipts	4,542.54
		Overdrawn	34.68
			<hr/>
			\$4,667.97

TREASURER'S REPORT.

*Richard H. Lewis, in account with the State Laboratory of Hygiene,
January 1, 1907, to December 31, 1908.*

1907.		DISBURSEMENTS.	
Jan. 29.	W. H. McIntire, salary as assistant.....	\$	60.00
Mch. 1.	Southern Express Company, expressage on water samples, January, February and March accounts,		61.33
	S. Dr. G. McCarthy, money advanced to pay chemists, stenographer, and janitor		75.00
April 1.	Southern Express Company, expressage on water samples		16.70
	2. Dr. G. McCarthy, salary as Biologist.....		300.00
	S. Dr. G. McCarthy, expenses of Laboratory, as per vouchers		62.50
	W. H. King Drug Company, Laboratory supplies,		1.63
	Arthur H. Thomas, Laboratory supplies.....		25.24
	Eimer & Amend, Laboratory supplies.....		41.49
	13. Dr. G. McCarthy, salary of assistants in Laboratory		20.00
	Dr. G. McCarthy, expenses as witness in water case at Lincolnton.....		20.80
May 1.	Miss Daisy Allen, salary as assistant, half month, Southern Express Company, expressage on water samples		30.00
	Dr. G. McCarthy, Laboratory expenses, as per vouchers		16.70
	Dr. G. McCarthy, Laboratory expenses, as per vouchers		23.75
June 6.	Dr. G. McCarthy, sundry Laboratory expenses in May, as per vouchers.....		37.63
	Miss Daisy B. Allen, Chemist, May salary.....		60.00
	18. Dr. G. McCarthy, amount allowed by Board for purchase of typewriter and all claims for extra analyses of all descriptions against the Laboratory, in full		500.00
	Dr. G. McCarthy, salary, second quarter.....		300.00
	22. Miss Daisy B. Allen, Chemist, June salary.....		60.00
	Dr. G. McCarthy, balance due on June salary, Agricultural Department having ceased payment, with May		66.66
July 1.	Southern Express Company, water expressage in June		14.90
	30. Dr. G. McCarthy, Laboratory expenses May and June, as per vouchers.....		36.26
	Dr. G. McCarthy, July salary.....		166.66

July	30.	Miss Daisy B. Allen, Chemist, July salary.....	\$ 75.00
		Miss Cecil Woodward, stenographer, July salary,	6.25
		William Mundy, janitor, one-half July wages....	7.50
Aug.	1.	Southern Express Company, July account.....	15.95
	7.	W. H. King Drug Company, chemicals for Laboratory	5.09
		Whitall, Tatum & Co., chemicals for Laboratory,	35.18
		Eimer & Amend, chemicals for Laboratory.....	13.94
	27.	American Surety Company, one-half premium bond of Treasurer State Board of Health and State Laboratory of Hygiene, to May, 1908.....	10.00
	31.	Dr. G. McCarthy, salary for August.....	166.66
		Miss Daisy B. Allen, Chemist, August salary.....	75.00
		Fred. Morgan, janitor, wages, 3 weeks in August,	12.50
		Dr. G. McCarthy, sundries as per vouchers attached	9.67
Sept.	10.	Dr. G. McCarthy, advanced to pay Miss Woodward's salary as stenographer.....	12.10
		Eimer & Amend, account to May 18th.....	9.69
Oct.	19.	Miss Daisy B. Allen, Chemist, September salary,	75.00
		Dr. G. McCarthy, September salary and extra time	181.66
		Dr. G. McCarthy, salary for stenographer and office boy	26.50
		Arthur H. Thomas Company, in full of account to September 1st	16.76
	29.	Southern Express Company, water expressage August and September	28.48
Nov.	1.	Dr. G. McCarthy, salary for October.....	166.66
		Miss Daisy B. Allen, Chemist, October salary....	75.00
		Miss Sophie Busbee, salary as stenographer in October	12.50
		Fred. Morgan, janitor, October wages.....	15.00
	14.	Southern Express Company, expressage in October,	15.80
	18.	Miss Daisy B. Allen, Chemist, November salary,	75.00
		Dr. G. McCarthy, November salary.....	166.66
		Dr. G. McCarthy, sundries, as per vouchers attached	25.32
		Miss Sophie D. Busbee, stenographer, November salary	12.50
		Fred. Morgan, janitor, November wages.....	15.00
		Southern Express Company, expressage in November	13.70
	21.	Dr. C. A. Shore, stamps for Laboratory.....	5.00
	24.	Carolina Wood Workers, 50 water crates.....	44.50
	30.	Miss Daisy B. Allen, Chemist, December salary..	75.00

Nov. 30.	Dr. C. A. Shore, 12 days' work during sickness of Dr. McCarthy; advanced salary for February, 1908	\$ 233.26
	Dr. G. McCarthy, salary for December.....	166.66
	Fred. Morgan, janitor, December wages.....	15.00
	Miss Sophie D. Busbee, stenographer, December salary	12.50
1908.		
Jan. 2.	Dr. G. McCarthy, sundry Laboratory expenses, as per vouchers attached	13.12
	10. Eimer & Amend, chemical apparatus.....	19.32
	Alfred Williams & Co., typewriter supplies.....	6.25
Feb. 1.	Miss Daisy B. Allen, Chemist, January salary..	75.00
	Fred. Morgan, janitor, wages for January.....	15.00
	Dr. G. McCarthy, in full of salary to date.....	166.66
	Miss Sophie D. Busbee, stenographer, January salary	12.50
	Dr. G. McCarthy, sundries, as per vouchers attached	12.83
	3. Southern Express Company, December and January accounts	29.20
	12. John Wiley & Sons, books for Laboratory.....	4.23
	North Carolina Board of Health, postage paid on bills 2½ years.....	17.54
	29. Dr. G. McCarthy, in full of salary for February and all claims of every kind against Laboratory, to date	181.76
	Fred. Morgan, janitor, February salary.....	12.50
	Miss Daisy B. Allen, Chemist, February salary...	75.00
	Miss Sophie D. Busbee, stenographer, February salary	12.50
Mch. 6.	Booker Hardy, whitewashing and fixing hearth and grate in Laboratory.....	5.25
	Southern Express Company, February account....	16.65
	F. M. Kirby Co., sundries for Laboratory, as per voucher	1.00
	10. Stamps and stamped envelopes.....	50.00
	26. Eimer & Amend, Laboratory supplies.....	136.08
	27. Ellington Lumber Company, work in fitting up Laboratory	54.00
	30. Dr. C. A. Shore, sundry Laboratory expenses, as per voucher attached	28.13
April 1.	Dr. C. A. Shore, Director, March salary and expenses of trip to Wilson to test filter.....	170.05
	Miss Daisy B. Allen, Chemist, March salary...	75.00
	Miss Mabel Massey, stenographer, March salary..	15.00

April	1.	Fred. Morgan, janitor, March wages.....	\$ 15.00
		Southern Express Company, March account.....	17.35
	3.	Standard Gas and Electric Company, fixtures for Laboratory	5.00
		Dobbin & Ferrall Company, linoleum for Laboratory	76.78
		Spencer Lens Company, autoclave.....	25.50
		Raleigh Marble Works, 1 slate slab.....	4.25
		Alfred Williams & Co., filing cabinet, mimeograph and sundry office supplies.....	83.25
		Arthur W. Fox, in full of account to date.....	4.50
		Thos. H. Briggs & Sons, Laboratory supplies, as per voucher	5.75
		G. S. Tucker & Co., desk and chair.....	17.00
		Eimer & Amend, chemicals and apparatus.....	36.51
	10.	Booker Hardy, whitewashing and plastering store-room	6.00
	15.	D. J. Thompson & Co., electrical fittings.....	3.50
		Johnson & Johnson, ice.....	3.50
		Baptist Book Store, carbon paper and note-books..	1.30
		Eimer & Amend, chemicals and apparatus.....	86.97
		Young & Hughes, plumbing and gas fitting in Laboratory	42.62
		W. H. King Drug Company, chemicals.....	7.35
		John Wiley & Sons, books.....	6.31
		Arthur H. Thomas, platinum dishes.....	129.55
May	23.	Capital City Telephone Company, rent of No. 358 and long-distance messages	5.90
	25.	Arthur W. Fox, 1 candle turbidimeter.....	12.00
	30.	Dr. C. A. Shore, Director, April salary.....	166.66
		Dr. C. A. Shore, sundries, as per vouchers attached	8.26
		Miss Daisy B. Allen, Chemist, April salary.....	75.00
		Miss Mabel Massey, stenographer, April salary..	15.00
		Fred. Morgan, janitor, April wages.....	14.25
		J. D. Riggan Co., sundry Laboratory supplies....	3.95
	1.	T. E. Green, typewriter supplies.....	2.45
		S. Hart-Ward Hardware Company, 1 refrigerator,	33.95
	16.	Dr. C. A. Shore, sundries, as per vouchers attached	15.26
	19.	J. E. Mitchell, cabinet work for Laboratory....	3.00
	28.	Dearborn Desk Company, 1 typewriter cabinet..	13.00
	29.	Eimer & Amend, microtome, incubator, glass bottles, etc.	231.85
		Arthur H. Thomas Company, microscope and supplies therefor	60.75

May	29.	Young & Hughes, 1 slab.....	\$ 2.75
		Southern Express Company, express in April....	22.40
		Dobbin-Ferrall Company, laying old linoleum....	2.50
		Carolina Electric Company, electric connections in Laboratory, as per voucher attached.....	7.29
		Ellington Lumber Company, 1 table, to order....	3.25
		Capital City Telephone Company, rent for No. 358 in Laboratory, May.....	3.50
	30.	Miss Daisy Allen, salary for May.....	75.00
		Dr. C. A. Shore, salary as Biologist and Director, May	166.67
		Fred. Morgan, janitor, wages for May.....	15.00
		Miss Mabel Massey, salary as stenographer for May	15.00
June	4.	Carolina Wood Workers, case in office.....	25.00
	5.	Thos. H. Briggs, sundries for Laboratory, as per vouchers	4.70
		Raleigh Electric Company, light in May.....	1.35
	6.	Students' Book Store, books.....	52.35
		W. H. King Drug Company, alcohol.....	2.90
		Journal of Experimental Medicine, Vol. 10.....	5.00
		Eimer & Amend, sterilizer, etc.....	59.25
		F. M. Kirby & Co., towels.....	1.80
		Standard Gas and Electric Company, gas in May, Alfred Williams & Co., office supplies.....	4.25
		G. E. Stechert & Co., Journal of Hygiene and Archive Fur Hygiene, Vols. 65 and 66.....	13.00
		Johnson & Johnson, ice.....	2.00
		J. Schwartz, beef for bouillon.....	4.90
	8.	Ellington Lumber Company, 1 table to order....	3.25
	19.	Southern Express Company, express in May.....	16.45
	30.	Dr. C. A. Shore, Director and Biologist, June salary	166.66
		Miss Daisy B. Allen, Chemist, June salary.....	75.00
		Fred. Morgan, janitor, June wages.....	15.00
		Dr. C. A. Shore, Director, sundries, as per vouchers attached	8.32
		Miss Mabel Massey, stenographer, June salary..	15.00
July	7.	Johnson & Johnson, ice in June.....	3.00
		Southern Express Company, expressage in June..	16.60
	9.	Eimer & Amend, sieve and copper pipes.....	16.85
		Arthur H. Thomas Company, microscope and sup- plies	99.25
		Capital City Telephone Company, rent for June, Lumsden Bros., 1 copper pan.....	3.50
		Powers & Anderson, cover glass jars, etc.....	2.50
			10.15

July	9. Alfred Williams & Co., stencil paper and 1 quart ink	\$ 2.50
	Standard Gas and Electric Company.....	2.37
	Raleigh Electric Company.....	1.48
	King-Crowell Drug Company, supplies.....	1.15
	14. Capital City Telephone Company, rent for July.....	3.50
	22. Stamps	30.00
	25. Busbee & Busbee, agents and attorneys, $\frac{1}{2}$ premium on bond of Treasurer.....	10.00
	31. Dr. C. A. Shore, Director and Biologist, July salary	166.67
	Dr. C. A. Shore, Director, sundries, as per vouchers attached	3.97
	Miss Daisy B. Allen, Chemist, July salary.....	75.00
Aug.	Miss Mabel P. Massey, stenographer, salary for July	15.00
	Fred. Morgan, janitor, wages for July.....	15.00
	Carolina Wood Workers, 1 bottle rack.....	1.75
	1. Southern Express Company, expressage in July.....	18.45
	4. Dobbin-Ferrall Company, 15 yards domestic.....	1.25
	Johnson & Johnson, ice in July.....	4.00
	7. J. Schwartz, beef.....	6.40
	Department of Health, City of New York, virus for one case suspected rabies.....	25.00
	11. Whitall, Tatum & Co., merchandise.....	11.12
	Union Paper Company, mailing cases.....	4.97
Sept.	Standard Gas and Electric Company, changing and refitting pipes and gas.....	15.38
	W. H. King Drug Company, merchandise.....	3.30
	Raleigh Electric Company, July bill.....	2.85
	Smith-Forrest Company, matches.....	1.20
	9. Dr. C. A. Shore, Director and Biologist, August salary	166.67
	Miss Daisy B. Allen, Chemist, August salary.....	75.00
	W. L. Grimes, Assistant Biologist, August salary.....	60.00
	Miss Mabel P. Massey, stenographer, August salary	15.00
	Fred. Morgan, janitor, wages in August.....	15.00
	10. G. S. Tucker & Co., 1 couch.....	11.13
	12. Dr. C. A. Shore, money advanced to make payment for treatment for rabies (\$50), sundries, as per vouchers	64.89
	Alfred Williams & Co., office supplies.....	4.25
	Arthur H. Thomas Company, messler jars, etc.,	25.84
	W. H. King Drug Company, chemicals.....	3.58
	Raleigh Electric Company, August account.....	2.55

Sept.	12.	Standard Gas and Electric Company, August account	8 9.00
		G. E. Stechert & Co., Archive Fur Hygiene, Vol. 67,	3.75
		Eimer & Amend, 1 inspissator and other apparatus,	151.45
	22.	Capital City Telephone Company, rent, August and September	7.00
		B. R. Rickards, sub. Amer. Journal Pub. Hygiene,	1.00
Oct.	1.	Dr. C. A. Shore, Director and Biologist, September salary	166.67
		Miss Daisy B. Allen, Chemist, September salary,	75.00
		W. L. Grimes, Assistant Biologist, September salary	68.00
		Miss Mabel P. Massey, stenographer, September salary	15.00
		Fred. Morgan, janitor, September wages.....	15.00
		Arthur H. Thomas Company, 1 pair platinum crucible tongs	4.30
	3.	Johnson & Johnson, ice in September.....	6.00
	20.	Dr. C. A. Shore, Director, trip to Washington, and amount of attached receipts.....	36.73
	27.	Raleigh Electric Company, statement for September	2.10
		Standard Gas and Electric Company, statement for September	6.50
		W. H. King Drug Company, chemicals.....	6.12
		Improved Mailing Case Company, mailing cases,	4.16
		Journal of Infectious Diseases, Vol. 5.....	6.25
		King-Crowell Drug Company, syringe and needles,	4.75
		Southern Express Company, September statement,	19.65
		Alfred Williams & Co., office supplies.....	2.85
	28.	Dr. R. M. Grima, services as Assistant Biologist, September 26 to October 28.....	88.88
	31.	Dr. C. A. Shore, Director and Biologist, October salary	166.66
		Miss Daisy B. Allen, Chemist, October salary....	75.00
		Dr. C. A. Shore, Director, expenses of visit to State Laboratory of Georgia, and sundries, as per vouchers attached	27.27
		Miss Willie R. Law, 45 hours copying, at 25 cents per hour	11.25
		Miss Mabel P. Massey, stenographer, October salary	15.00
		Fred. Morgan, janitor, October wages.....	15.00
Nov.	3.	Henry T. Hicks, bandages.....	1.95
	4.	Postal Telegraph-Cable Company, telegrams in October	4.27

Nov.	7.	Johnson & Johnson, ice in October.....	\$ 2.00
	9.	Capital City Telephone Company, rent of No. 35S and long-distance messages	4.80
		Carolina Power and Light Company, October state- ment	2.16
		Standard Gas and Electric Company, October state- ment	7.50
		W. H. King Drug Company, October statement..	3.30
		Arthur H. Thomas, apparatus.....	14.22
	16.	Thos. H. Briggs & Sons, 1 Yale latch.....	1.50
	21.	Department of Agriculture, equipment and ma- terial used by Laboratory of Hygiene.....	200.00
	30.	Dr. C. A. Shore, Director and Biologist, November salary	166.67
		Miss Daisy B. Allen, Chemist, November salary,	75.00
		Miss Mabel P. Massey, stenographer, November salary	15.00
		Fred. Morgan, janitor, November wages.....	15.00
		Dr. C. A. Shore, Director, sundries, as per at- tached vouchers	3.07
Dec.	1.	Southern Express Company, August and October expressage	36.25
	2.	Southern Express Company, November statement,	21.05
	7.	J. Schwartz, beef	8.30
		Johnson & Johnson, November statement.....	2.00
		Standard Gas and Electric Company, November statement	7.00
		Smith-Forrest Company, sapolio and matches....	2.00
		Carolina Power and Light Company, November statement	2.76
		Whitall, Tatum & Co.....	10.85
	14.	Capital City Telephone Company, rent for No. 35S, November and December.....	7.00
	23.	Dr. C. A. Shore, Director and Biologist, December salary	166.67
		Miss Daisy B. Allen, Chemist, December salary,	75.00
	26.	Arthur H. Thomas, 2 platinum crucibles.....	23.63
	28.	Carolina Electric Company, 500 pieces of copper,	4.00
	31.	Fred. Morgan, janitor, wages for December....	15.00
		Miss Mabel P. Massey, stenographer, December salary	15.00
Balance on hand			\$ 835.16
Receipts			9,233.40
Overdrawn			36.12
			<hr/> \$10,104.68

APPENDIX.

[EXTRACTS FROM THE MONTHLY BULLETIN.]

THE DEATH OF DR. MURPHY.

In the passing away of Dr. P. L. Murphy, Superintendent of the State Hospital for the Insane at Morganton, on September 11th, the State lost one of its foremost men and most useful citizens. In the magnificent institution over which he presided from its beginning, twenty-four years ago, continuously enlarged and perfected under his inspiration and direction, he has left a monument worthy of his ability and single-hearted devotion to its interests. He was endowed with a vigorous intellect, characterized by the genius of common sense and the special gift of rare executive power. For many years we, as one of a committee from the Board of Health, have made the official inspections under the law, and it rarely ever happened that we found anything to criticise, and when we did it was almost invariably called to our attention by him, whose watchful eye nothing escaped, with the request that we aid him in securing its correction by the Board of Directors or by the Legislature. We never visited the Hospital that we were not filled with admiration, not only of the magnificent buildings and beautiful grounds, but chiefly of its administration—so extensive, so complex, and yet running so smoothly and noiselessly under the master hand that controlled it. Moreover and above all, he had a heart of gold, and his interest in and devotion to his afflicted wards were touching. And they repaid it with a respect and affection seldom seen.

We give below a rarely discriminating, just and beautiful tribute from the pen of the distinguished editor of the *Charlotte Observer*, for many years a member and president of the Board of Directors of the Hospital:

PATRICK LIVINGSTON MURPHY.

The State is prepared, so far as there can ever be preparation for tidings of the death of one so widely known, so beloved and so useful to his generation, for the announcement of the passing of Dr. P. L. Murphy, late Superintendent of the State Hospital at Morganton. For more than a year an inexorable enemy had been sapping his vitality, and yesterday completed its fatal work. The time and circumstances are not auspicious to the writing of those things which should be now written, and yet no time would suffice for putting on record a fit memorial of this man. It is best writ in the magnificent institution over which he presided from the day of its opening until his incapacity, and in the hearts of the thousands of North Carolinians who,

in themselves or through family or friends, were beneficiaries of his skill. It is not too much to say that he was the foremost alienist of the South, or that the State Hospital at Morganton is at the head of institutions of its class in the section. It was his very life. From a red and barren hill he had seen the place transformed into one of surpassing beauty, and had witnessed the growth of the institution from a modest beginning into one which now shelters and cares for more than eleven hundred patients. A multitude has entered its doors with minds diseased and emerged with reason restored and themselves restored to their families and to their usefulness to society.

Of his skill in his specialty all North Carolina knows, and his executive ability, his tact in management, are scarcely less known. A Scotchman of Scotchmen, he was endowed with all the strength of mind and body, all the conviction and pertinacity of purpose, of the peculiarly strong and forceful race. The antipodal elements of rugged power and of tenderness which, when we see united, make a product which we remark upon and wonder at, were perfectly blended in him, forming a character which compelled both admiration and affection. To him all men and women were as one. There were none too humble to enlist his sympathy or challenge his best skill, and to the lowliest people of the State the news of his death will carry as keen a pang as will be felt in the hearts of the highest. It is his glory that in his exalted professional life he knew no distinction between classes.

To undertake to recite Dr. Murphy's qualifications for his life-work, how fully he met and surpassed every expectation, how grandly he lived up to his great opportunities and fulfilled his mission to humanity, would be only to repeat to North Carolina what is familiar history; and it is not certain that one who so much loved him as a friend and sorrows so greatly on account of his death could write in moderation of him at his open grave. To thousands this event is a personal bereavement—greatest to those who knew the subject best. There was never a man more lovable in his close personal relations. The public admired him for his ability, and all have gratitude toward him for what he has done for North Carolina. His familiars loved him for his golden heart, which was ever ready to melt in sympathy or at the call for charity; for the loyalty of his friendship, for his high honor and his unswerving fidelity to any cause which he espoused.

Engaging in every way, Dr. Murphy added varied scholarship to his qualities of charm. There was no conversation to which he could not contribute; there was no company in which he did not shine. The pale messenger, in beckoning him, has called one of the front rank of North Carolinians.

On the sloping, velvet-like lawn on which his eye has so often dwelt with delight, in the shadow of the great buildings which are his best monument, they will lay him away to-day to await the call for the accounting, to which he will answer, unafraid, for the deeds done in the body.

CHARLES WARDELL STILES—BENEFACTOR OF THE SOUTH.

"The blood is the life." It is an elementary truth that the very essence of lusty and vigorous life is an abundant supply of pure and rich blood. It is the power that runs the vital machinery, and when deficient in quality and quantity the machine slows down and its functions are imperfectly performed. In its weakened state obstacles that to a machine running under a full head of steam would scarcely make an impression, stop it altogether. Those peculiar principles which constitute the basis of immunity or protection against disease, whatsoever they may be, all are agreed, exist in the blood. When deficient, diseases of various kinds gain a foothold in the body and in too many cases overcome it. Every one knows that the best preventive of disease is vigorous health, the bed-rock foundation of which is the blood. Anemia, which does not mean infected or contaminated blood, but simply insufficiency in quantity and inferiority in quality, is, therefore, responsible for many of our most serious ills. Sapping the vitality it dulls the mind, weakens the spirit or energy, largely destroys the incentive to action and thereby prevents the proper and full performance of the manual labor necessary to the provision of a comfortable and sufficient support, and by this lack exaggerates the original cause. Moreover, if occurring in childhood, it prevents the normal growth and development, and by diminishing the vital resistance shortens the natural length of life, renders its subjects more susceptible to and more easily overcome by the many diseases to which man is liable, and thus increases the death rate. But it is unnecessary to say more about the evils and dangers of anemia; they are already known to every intelligent and well-informed man, whether physician or layman.

That anemia, more or less pronounced, is widely prevalent among the "poor whites" of the South no observant man who has come in frequent contact with that element of our population can successfully deny. Prior to the discovery in 1902, by Stiles, of a species of hookworm, indigenous to the warmer sections of the United States, as well as to other subtropical or tropical regions of America, his working out of its life history, in which he showed it to be a blood-sucking parasite, and his demonstration of its widespread distribution, we attributed the anemia to other causes. In the sandy coastal plain, where malaria is abundant, we ascribed it to that poison, while in the hill country and in the mountains, we charged it up to fried meat and soda biscuit. Malaria and a bad dietary, no doubt, play an important part in causing anemia, but in the light thrown upon the subject by Stiles there is no doubt in our mind that the hookworm is at the bottom of a large majority of cases. It should

be remembered that the hookworm is most abundant in sandy regions—the same low-lying regions where malaria is most common—and we are confident that in nearly all of the cases ascribed to malaria the presence of hookworm can be demonstrated, and that it is likewise abundant in the rolling and mountain sections. While full and accurate statistics are not yet available, we nevertheless feel sure that Dr. Stiles is within bounds in his estimate that 33½ per cent of the white rural population of the South, belonging to the class referred to, are afflicted with hookworm disease, the essential feature of which is anemia.

No purer strain of Anglo-Saxon blood exists in America than courses through the veins of the small farmers of the South, and, true to their blood, they are a brave, proud and independent people. If any one doubts the quality of the stuff of which they are made let him turn to the records of the War Between the States, in which they bore their full share, and read the story of the many bloody battlefields, from Bethel to Appomattox, on which their desperate and heroic valor crowned them with immortality.

But they are sadly handicapped by disease and ignorance, due to circumstances beyond their control. Cured of the one and relieved of the other, bone of our bone and flesh of our flesh, they would develop into an element in our industrial and political life beyond compare superior to any foreign immigration possible. Can any one deny this? The State is wide-awake to the importance of educating all our people, and in another generation the last half of the problem will be solved. And can any one deny that the man who has found the key to the solution of a very large part of the first half of the problem, of the whereabouts of which all of us were in utter ignorance, is a benefactor to North Carolina and the South? Charles Wardell Stiles is the man who has done this, and if he were to die to-day he would be so considered by every lover of the truth who knows the facts. But if circumstances shall so come about as to enable him to carry out what we know to be the desire of his heart—to devote his life to aiding us in our stupendous fight, not only against the hookworm, but other unsanitary conditions—he will be regarded, and justly regarded, by all our people, as one of the best friends and greatest benefactors the South has ever had.

INDEX.

	PAGE.
Board of Medical Examiners given power to establish reciprocity.	113
Cesspools	81, 90, 91
Conjoint Session of the Board with State Medical Society, 1907..	11
Conjoint Session of the Board with State Medical Society, 1908..	18
Hookworm	22, 147
Hydrophobia, Treatment of, Provided for.....	108
Inspection of State institutions.....	66 to 78
Laboratory of Hygiene, Report of Examinations of.....	64
Meeting of the Board, at Morehead City.....	8
Milk Supply and the Public Health.....	29
Murphy, Death of Dr.....	145
Negro, Medical Influence of, on Anemia in the White.....	22
Nuisances, Abatement of.....	106
Pellagra	45, 52
Pellagrous Insanity	52
Railroad Cars and Toilet-rooms to be kept clean.....	112
Report of Secretary, May 1, 1906, to May 1, 1907.....	12
Sanatorium for Treatment of Tuberculosis.....	108
Sewage Disposal in a Wilmington Suburb.....	92 to 96
Sewage Disposal without Sewers.....	96, 91
Sewerage at Reidsville.....	81 to 90
Smallpox	14, 19, 114
Statistics, Vital	119
Stiles, Dr. C. W., Editorial on.....	147
Treasurer, Report of.....	131
Tuberculosis, N. C. Association for the Prevention of.....	61, 62
Sanatorium provided for.....	108
Separation of Prisoners with.....	111
Typhoid Fever, at Reidsville.....	84, 86, 88
at Council	97 to 103
Vaccination, Compulsory	114
Vital Statistics	119
Water Supplies, Amendments of Act in Relation to.....	107
Water Supplies, Cleaning of Standpipe.....	79
Water Tax at Lumberton.....	104

